Scientific American.

A JOURNAL OF PRACTICAL INFORMATION IN ART, SCIENCE, MECHANICS, AGRICULTURE, CHEMISTRY, AND MANUFACTURES.

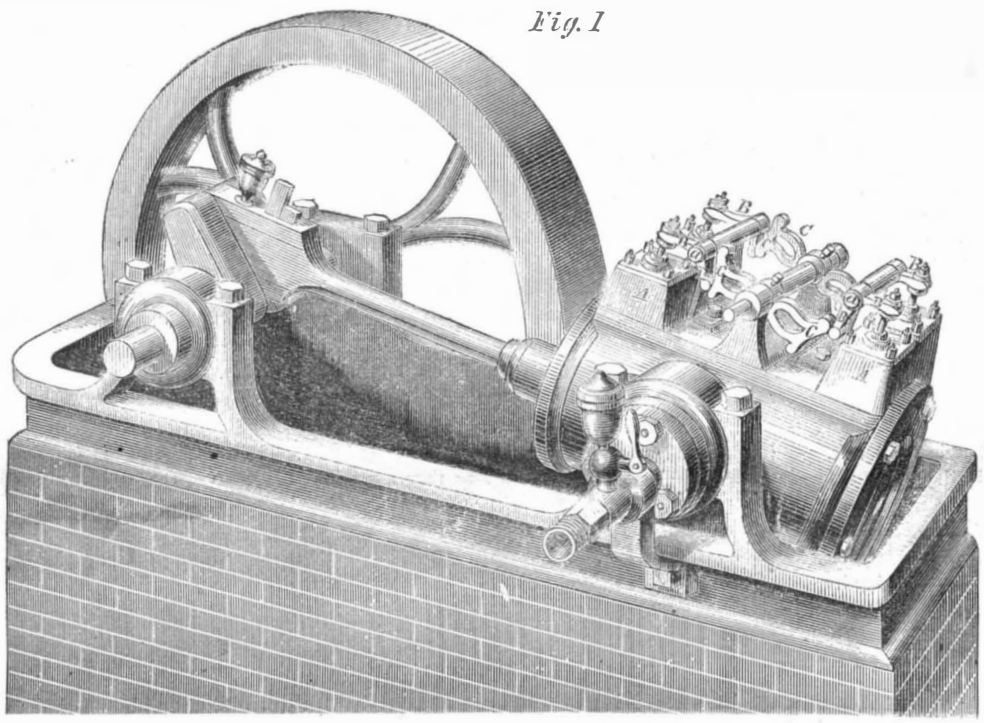
VOL. 1.—No. 5. NEW YORK, JULY 30, 1859. NEW SERIES.

IMPROVED SINGLE BALANCE PUPPET VALVE.

The steam-engine has engaged almost every inventor's attention at some period of his or her (for there are lady inventors we are happy to say) life, but few, as all will readily acknowledge, leave their impress on the machine by such an improvement as is the subject of our engravings, which represent the invention of Charles Westland, who is at present residing at the Moss Hotel, No. 30 Bowery, New York.

Fig. 1 shows the improvement adapted to an oscillating engine in which the valve chests, A, are placed on the top of the cylinder, and the valves are elevated and allowed to drop by their own weight, by angle levers, B, moving on centers, *a*. These angle levers are operated by cams, C, which are braced to the framing of the engine and remain stationary while the cylinder oscillates, and as it carries the angle levers with it, it causes them to move against the cams and so receive their motion. An oscillating engine which had this valve attached (in fact, the one of which our engraving is a portrait) has been worked up to 400 revolutions a minute, and there does not seem to be any limit to the speed at which this puppet-valve can be run. Fig. 2 is a vertical section across the valves at one end of the cylinder, D, and is taken from an engine now running at the works of the Atlantic White Lead Company, Brooklyn, L. I. A channel or steam passage, E, runs the whole length of the cylinder on each side, one of them having an induction passage, *b*, and the other an exhaust passage, *c*. On the top of the cylinder is the steam chest, F, which has the valve openings exactly corresponding to the hole in the channel, so that the communication is perfect. The steam valve, G, (represented closed, thereby preventing the admission of steam to the cylinder through the channel, E, and the opening, *d*, of the cylinder into the steam chest, F,) is mounted on a spindle, *e*, and is a cylinder of metal, *f*, just turned to fit its bearings steam-tight, the cylinder or valve, *f*, being connected with the spindle by arms. The spindle is guided in its up-and-down motion and prevented from shaking or jarring by its stuffing-box, *g*, on the top, and a bearing or guide, *g'*, in a cross in the opening between the valve and the channel. The valve has two seats; one, *h*, at the bottom of the steam chest, and the other, *h'*, at the top of the chest and about in the center of the space in which it works. This last seat forms a seat for the top of the valve when closed. Steam might be taken in through both seats; but as the area of the lower opening is always large enough, there is no necessity to take it in through more than the bottom seat. From this cause the motion of the valve need only be about one-fourth of the ordinary puppet valve, and by this means they are enabled to be opened and closed with more rapidity, and consequently, a greater advantage than usual can be taken of the expansion of the steam. The exhaust valve, G', is precisely the same in construction as the steam valve just described. The method in which these valves are operated, D being a stationary cylinder, is shown in Fig. 3, which is a view of the cylinder taken to show the valves at both ends. D is the cylinder and A the valve chests. The spindles, *e*, project through the stuffing-boxes, *g*, and are moved by angle levers, B, which are elevated and allowed to fall by an oscillating arm, H,

Fig. 1



WESTLAND'S SINGLE BALANCE PUPPET VALVE.

Fig. 2

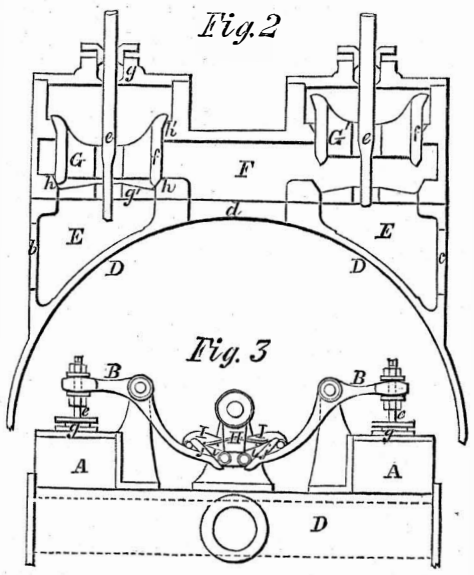


Fig. 3

which is moved by the eccentric. To this arm small pieces, *i*, are jointed, and they carry pins on their ends which, moving on the angle levers, depress them until they are above the level of a sliding toe, *j*, that is on the end of a piece, I, at the back of the arm, H, and when they pass over that the valves are allowed to drop by their own weight. A spring keeps the jointed piece, *i*, in position. The sliding toes are connected with the governor and so form a cut-off, if they are raised in their position on the stationary piece, I. The pins on the end of the jointed pieces, *i*, slide under them, and if they are lowered in their position the pins slide under them, so that the valve can be closed at any point of the stroke that may be regulated by the governor.

The company who own the engine from which these drawings are taken have written to the inventor stating that they have saved a considerable amount of coal by the use of this valve.

The inventor will be happy to furnish any further information upon being addressed as above. He is about to apply for a patent.

WASHING IN MOLTEN METAL.—"I would only repeat this experiment, which I am not fond of, for your sake," M. Boutigny said; "I confess that, though I am morally sure of the result, I always feel an emotion which I cannot dispel." "If that be the case," I replied, "suppose we go? I will believe your word." "No, no; I am bound to show you this curious phenomenon. But, by the way," the learned doctor added, "let me see your hands." He took them in his. "Hang it," he went on, "they are very dry for our experiment." "You think so?" "Certainly." "Then it is dangerous?" "It might be so." "In that case we will go," I said, turning to the door. "That would be a pity," my companion replied, holding me back: "stay, dip your hands in this bucket of water, dry them well, and they will be sufficiently damp."

I must mention that, to ensure the success of this marvelous experiment, no other condition is requisite than to have the hands slightly damp. I had scarce finished wiping my hands when the furnace was opened, and a jet of molten metal, about the thickness of my arm, burst forth. Sparks flew in every direction, as if it were a firework performance. "Wait a few minutes," M. Boutigny said, "till the metal is cleansed, for it would be dangerous to try our experiment at this moment."

Five minutes later the stream of liquid fire left off bubbling and emitting scoriæ; it became, indeed, so limpid and brilliant, that it scorched our eyes at a few yards off. All at once my companion walked up to the furnace, and calmly began washing his hands in the metal as if it had been lukewarm water. I make no pretence to bravery. I confess at this moment my heart beat as if it would burst, and yet, when M. Boutigny ended his strange ebullitions, I walked forward in my turn with a determination that proved a certain strength of will. I imitated my professor's movements; and in my joy, I took a handful of the metal and threw it high in the air, and it fell back in a fire-shower on the ground.—*Memoirs of Robert Houdin.*

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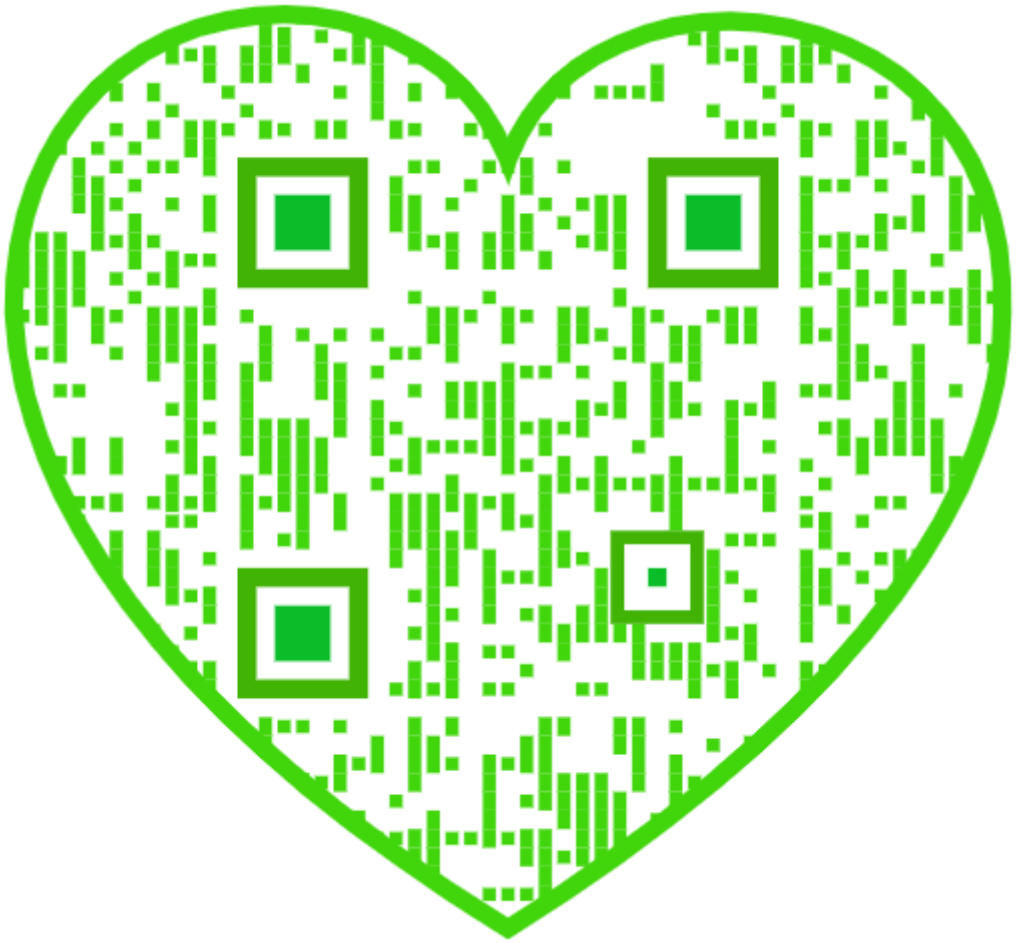

THE TAIL OF A TADPOLE.

Is any one partial to bull-frogs? can any one but the gourmand who loves their hind legs served up in white sauce, find any interest in such unwieldy, unmusical, and lopping animals, who have not even the toad's redeeming feature of wearing a jewel in their heads? Yes! some can. The naturalist who loves to investigate all that God has made, and who regards none of his works as "common or unclean."

If to the common mind, frogs are uninteresting, how much more so must Froggy junior, the little black and wriggling tadpole be! What can be found in him worth studying? Science answers that his very tail is a world of mystery and full of wonders as a conjuror's box. Listen how it is described by that loving naturalist and pleasant writer, C. H. Lewes, in the first number of the new English periodical called *Once a Week*:—

A blade of grass is a world of mystery, would men observingly distill it out. My erudite friend, Gerunds, glancing round my workroom, arrested his contemptuous eye on a vase abounding in tadpoles, and asked me with a sniffling superiority, "Do you really mean to say that you find any interest in these little beasts?"

"As much as you find in Elzevirs," I energetically answered.

"H'm!" grunted Gerunds.

"Very absurd, isn't it? But we have all our hobbies. I can pass a bookstall on which I perceive that the ignorance of the bookseller permits him to exhibit an edition of Persius among the rubbish at 'one shilling each.' The sight gives me no thrill—it does not even slacken my rapid pace. But I can't so easily pass a pond in which I see a shoal of tadpoles swimming about, as ignorant of their own value, as the bookseller is of Persius. I may walk on, but the sight has sent a slight eleciric shock through me. Why, sir, there is more to me in the *tail* of one of these tadpoles than in all the poems of that obscure and dreary Persius. But I wont thrash your Jew unless you thrash mine."

"Why what on earth can you do with the tail?"

"Do with it? Study it, experiment on it, put it under the microscope, and day by day watch the growth of its various parts. At first it is little but a mass of cells. Then I observe some of these cells assuming a well-known shape, and forming rudimentary blood-vessels. I also observe some other cells changing into blood cells. Then the trace of muscles becomes visible. These grow and grow, and the pigment-cells, which give their color to the tail, assume fantastic shapes."

"Very interesting, I dare say."

"You don't seem to think so, by your tone. But look in this vase: here you see several tadpoles with the most apologetic of tails—mere stumps, in fact. I cut them off nine days ago."

"Will they grow again?"

"Perfectly; because, although the frog dispenses with a tail, and gradually loses it by a process of resorption as he reaches the frog form, the tadpole needs his tail to swim with; and nature kindly supplies any accident that may deprive him of it."

"Yes, yes," added Gerunds, glad to feel himself once more in the region of things familiarly known: "just like the lobster, or the crab, you know. They tear off their legs and arms in the most reckless manner, yet always grow them again."

"And would you like to know what has *become* of these tails?"

"Arn't they dead?"

"Not at all. 'Alive and kicking.'"

"Alive after nine days? Oh! oh!"

"Here they are in this glass. It is exactly nine days since they were cut off, and I have been watching them daily under the microscope. I assure you that I have seen them *grow*, not *larger*, indeed, but *develope* more and more, muscle-fibers appearing where no trace of fiber existed, and a cicatrice forming at the cut end."

"Come, now, you are trying my gullibility!"

"I am perfectly serious. The discovery is none of mine. It was made this time last year by M. Vulpian in Paris, and I have only waited for the tadpole season to repeat the observations He says that the tails constantly lived many days—as many as eighteen on one occasion; but I have never kept mine alive more than eleven. He says, moreover, that they not only grow, as I have said, but manifest sensibility, for they twist about with a rapid swimming movement when irritated. I have not seen this, ut M. Vulpian is too experienced a physiologist to have been mistaken; and with regard to the growth of the tails, his observations are all the more trustworthy because he daily made drawings of the aspect presented by the tails, and could thus compare the progress made."

"Well, but I say, how the deuce *could* they live when separated from the body? our arms or legs don't live; the lobsters legs don't live."

"Quite true; but in these cases we have limbs of complex organization, which require a complex apparatus for their maintenance; they must have blood, the blood must circulate, the blood must be oxygenated——"

"Stop, stop; I don't want to understand why our arms can't live apart from our bodies. They *don't*. The fact is enough for me. I want to know why the tail of tadpole can live apart from the body."

"It *can*. Is not the fact enough for you in that case also? Well, I was going to tell you reason. The tail will only live apart from the body so long as it retains its early immature form; that is to say, so long as it has not become highly organised. If you cut it off from a tadpole which is old enough to have lost its external gills a week or more, the tail will *not* live more than three or four days. And every tail will die as soon as it reaches the point in its development which requires the circulation of the blood as a necessary condition."

"But where does it get food?"

"That is more than I can say. I dont know that it wants food. The power of abstinence possessed by reptiles is amazing. I was reading the other day an account of a reptile which had been kept in the Boston Musenm for eight-and-twenty months without any food, except such as it might have found in the small quantity of dirty water in which it was kept."

"Really I begin to think there is more in these little beasts than I suspected. But you see it requires a deal of study to get at these things."

"Not more than to get at any of the other open secrets of nature. But since you are interested, look at these tails as the tadpoles come bobbing against the side of the glass. Do you see how they are covered with little white spots?"

"No."

"Look closer. All over the tail their are tiny cotton-like spots. Take a lens if your unaccustomed eye isn't sharp enough. There, now you see them."

"Yes; I see a sort of *fluff* scattered about."

"That fluff is an immense colony of parasites. Let us place the tadpole under the microscope, and you will see each spot turn out a multitude of elegant and active animals, having bodies not unlike a crystal goblet supported on an extremely long and flexible stem, and having round their *rim* or mouth a range of long delicate hairs, the incessant motion of which gives a wheel-like aspect, and makes an eddy in the water which brings food to the animal."

"Upon my word this is really interesting! How active they are! How they shrink up, and then, unwinding their twisted stems, expand again! What is the name of this thing?"

"*Vorticella*. It may be found growing on water fleas, plant, decayed wood, or these tadpoles. People who study the animalcules are very fond of this Vorticella."

"Well I never could have believed such a patch of fluff could turn out a sight like this: I could watch it for an hour. But what are these small yellowish things sticking on the side of parasites?"

"These, my dear Gerunds, are also parasites."

"What, parasites living on parasites?"

"Why not? Nature is economical. Don't you live on beef and mutton and fish? Don't these beefs, muttons, and fish live on vegetables and animals? don't these vegetables and animals live on other organic matters? Eat and be eaten is one law; life and let live is another."

Gerunds remained thoughtful; then he screwed up one side of his face into frightful contortions, as with the eye of the other he resumed his observations of the Vorticella. I was called away by a visitor to whom I didn't care to show my tadpoles, because to have shown them would have been to forfeit his esteem for ever. He dosn't think very highly of me as it is, but has a misty idea that I occupy myself with science; and as science is respectable and respected—our Prince Consort and endless bishops patronizing the British Association for the Advancement of Science—the misty idea that after all I *may* not be an idiot, keeps his contempt in abeyance. But where he once to enter my work-room and see its bottles, its instruments, its preparations, and above all, the tadpoles, I should never taste his champagne and claret again.

AMERICAN MOWING-MACHINES IN ENGLAND.

While the armies of France are winning battles on the plains of Italy, our American inventors are achieving more noble victories on the plains of Great Britain. The *Liverpool Mercury* informs us that a recent trial took place at the farm of Jonathan Bell, of Blakelow Hall, with one of "Wood's American Combined Reapers and Mowers," and its performance gave the highest satisfaction to a large concourse of gentlemen who had assembled to witness its operations. The *Mercury* says:—

"The place selected for the trial was a piece of rye-grass, mixed with clover, of fair average growth. The experiment was highly successful, and many of the gentlemen present expressed themselves in terms of commendation as to the admirable manner in which the work had been performed. It ought to be stated that the unevenness of the ground presented what might be considered as obstacles to the machine; but these were overcome without any difficulty. In fact, the test being more severe than it would have been under ordinary circumstances, brought the peculiar advantages of the new principle more prominently into view. By an easy and simple adjustment, the machine may be employed in reaping corn and cutting grass or clover, combining all hese powers in a most efficient manner. Two other machines were exhibited at the same time—one for tedding or spreading hay, and the other a horse-rake, for collecting it and saving it from damage by exposure. These apparatuses are useful accompaniments to the mowing-machine previously described, all of which will, no doubt, as they become more generally known, be extensively used in agricultural operations. Towards the close of the day, the mowing-machine was tried in another field on Mr. Bell's farm, and with even greater success than in the first instance, from the more favorable character of the ground. Several of the gentlemen present, accompanied by Mr. Bell, inspected his farm, which is being fitted-up on the model principle, with new machinery and other appliances for conducting agricultural operations on an enlarged scale. We may add that Mr. Bell himself bore testimony to the advantages of the reaping and mowing-machine, which had been so successfully tested on his grounds."

The term *corn*, in the above extract, is used for oats, the name by which this grain is most commonly known in Great Britain. The horse-rake and hay-spreading machines, which accompanied the mower, were also American inventions, as we understand it.

We also learn from the Glasgow (Scotland) *Morning Journal*, of June 11, that a contest with one of Wood's machines, and one made at Stirling, in that country, by a Mr. Gardner, took place near Glasgow on the day previous to the above date, and which ended in the complete success of the American mower. There were several judges present from an Agricultural Fair then being held in Glasgow, and there was a great crowd of very intelligent farmers present. The *Journal* says:—

"Two fields of grass were placed at the disposal of the judges, and Wood's machine was first set to work upon a slightly hilly field of somewhat light grass. It was drawn by two horses, and without any 'swath' being cut, the machine was driven right to the top of the field, returned, and cut out a small square across the field. In crossing, the side-furrows were very deep, yet the machine worked without the slightest difficulty, making a clean and satisfactory cut.

Mr. Gardner's machine was next set to work in the same field; it was likewise drawn by two horses, and made a very creditable appearance, although it was quite evident at the first start that Wood's machine had an immense advantage by being provided with a guiding-pole, and from the complete arrangements for lowering and raising the cutters and working the machine. But the difference became more apparent when the two machines were set to work upon another field of remarkably heavy grass. There Wood's machine did even better work than upon the lighter grass, cutting close and regular, being easy of draft, and, after the horses became accustomed to it, was driven and worked by one

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person only. At the finish, a feat was accomplished which astonished every one, by cutting a breadth of laid and trampled grass in the most perfect manner. The superiority of Wood's machine over Gardner's was very marked; indeed, the work of the latter upon the heavy grass was inferior, while the work to the horses was most severe.

The judges now declared themselves quite satisfied. They highly commended Wood's machine, and awarded it a silver medal. Mr. Gardner's machine was commended. Although special reference was not made to time, the agents for Wood's machine guarantee it to cut a minimum of one acre per hour.

It will be interesting to know that the successful machine was worked by a Mr. Herman, who arrived from the United States only a few days ago, and who elicited the praise of all present for the cool and masterly manner in which he managed it."

IMPROVEMENT IN STEAM-BOILERS.

We find the following article in the Portland (Me.) *Advertiser*, of July 7; and as it has reference to the invention of Mr. F. B. Blanchard, which we illustrated and explained on page 412, Volume XIII., of the SCIENTIFIC AMERICAN, we transfer it to our own paper for the benefit of our readers, as it is a practical test of the value of the improvement, and thoroughly confirms the opinion we expressed nearly a year ago:—

"We have had running about in our harbor, for a few days past, a steam-tug on a novel plan, wherein the use of a chimney is dispensed with entirely while running, and the heat that usually passes off from the top of the smoke-pipe, oftentimes at so high a temperature as to ignite the gases, is made available to do duty in the engine.

A Board of Engineers was called by the proprietor of the tug, Captain Willard, and Mr. Blanchard, the inventor of the improvement, for the purpose of ascertaining the exact saving by this invention over all our old boilers, in order to settle the amount to be paid by Capt. Willard for the use thereof, and to test carefully the whole matter for the benefit of the public; and, for the information of all interested in this subject, we herewith annex the certificate of that Board of Engineers:—

'We, the undersigned, by request of Capt. Willard and Mr. F. B. Blanchard, and by a desire of our own to ascertain the value of Mr. Blanchard's invention, went on the steam-tug *Tiger* for the purpose of experimenting with the boiler, both upon the old plan and with Mr. Blanchard's improvements, it having been so constructed that it could be operated both ways.

On Monday last we experimented upon the old plan, carefully noting every particular, hight of water and head of steam, both at the commencement and the termination, quantity of fuel used and quantity left in the furnace at the conclusion. Commencing our experiment with the water at the boiling point, then noting the time consumed, distance run and revolutions made, the following is the summing-up of the results:—

Coal used to build fire and get up steam at the wharf, lbs.	1,071
Charged furnace with coal used in running the trip, lbs.	1,008
	2,079
Deduct coal saved from furnace, lbs.	500
Deduct quantity supposed to be consumed before boat left the wharf, in getting up steam, lbs.	200
	— 700
	1,379

On Thursday, the boiler was used with Mr. Blanchard's improvements, and everything made to correspond in getting up steam before starting from the wharf as in the former experiment:—

Coal used to build fire and get up steam at the wharf, lbs.	1,071
Charged furnace with coal used in running the trip, lbs.	126
	1,197
Deduct coal saved from furnace, lbs.	311
Do. quantity consumed, as before, lbs.	200
	— 511
	686

This statement is made in a simple form, so that any one using a steam-boiler, or interested in the saving of fuel, may readily understand it, and shows the quantity of fuel saved by Blanchard's improvement over the best made boilers to be the amount of over one-half.

The time of running, distance, number of revolutions, head of steam, hight of water, &c., were all made fully equal in Mr. Blanchard's experiment to the one made on Monday.

The engine was worked at full stroke without any cut-off, and the expansive power of super-headed steam being much greater than ordinary steam, we have not the least hesitation in stating that, had the test been made with an expansive-working engine, Mr. Blanchard would have shown a far greater gain than even the remarkable results above proved.

Signed:—JOHN SPARROW, Superintendent of Portland Company's Works; PHINEAS BARNES, JR., of Portland Co.'s Works; J. JOHNSON, Chief-engineer of *Forest City*; IRA WINN, Machinist and Engineer; THOMAS FAGEN, Eng'r of Portland Sugar House; JOS. L. WINSLOW, JR., of Winslow's Machine Shop; WM. K. RHODES, Eng'r of Winslow's Machine Shop; CHAS. W. CAHOON and WM. WILLARD.'"

An advertisement of Mr. Blanchard may be found in our advertising columns. *

BOILER-IRON.

The explosion of the boiler of the steamer *Bay State*, which recently took place on the East river, is attributed to an unseen flaw in the metal, and the blame of the explosion is thus to be fastened upon something which could not be detected when the boiler was made. But is this really the case? If the defective plate stood the hydraulic test of the Inspector, it should have stood the legal pressure of the steam, which is lower than the Inspector's pressure test. We throw out this remark because it is a conclusion derivable from all the circumstances of the case.

It has been stated by a correspondent of the *Daily News*, under the signature of "Engineer," that some dealers in boiler-iron place fraudulent stamps on poorer qualities, and sell them for the best. In regard to this statement, the *Courier and Enquirer* says:—

"When the laws providing for the inspection of steamboat boilers were passed, it was also provided that the materials of which the boilers were constructed should likewise be inspected. The intention of our legislators was that every means should be resorted to for rendering steamboat-traveling as safe as possible. It would appear, however, that though these inspectors may discharge their duties faithfully, yet the public can be cheated out of the benefits to be derived from their doing so. It is now said that iron which has been inspected and stamped, is sometimes re-stamped—that iron of a *second* quality is stamped as the *best* boiler-iron."

Three leading firms in this city, who deal in boiler-iron, have come out in a card, indignantly disclaiming such a practice for themselves, and demand to have the matter most thoroughly investigated. If the correspondent of the *Daily News* knows the firms who fraudulently stamp boiler-iron, it is very easy for him to point them out, and he ought to do it. Viewing this question from our position, it seems to us that the public discussion about fraudulent stamps on boiler-iron has been initiated for the purpose of directing public attention from the true cause of the explosion. We may be mistaken in this view, but from the facts which have been elicited thus far, we think our conclusion a very reasonable one.

THE MOTHER MOLDS THE MAN:—That it is the mother who molds the man, is a sentiment beautifully illustrated by the following recorded observation of a shrewd writer: "When I lived among the Choctaw Indians, I held a consultation with one of their chiefs respecting the successive stages of their progress in the arts of civilized life; and among other things, he informed that at their start they fell into a great mistake—they only sent boys to school. These boys came home intelligent men, but they married uneducated and uncivilized wives—and the uniform result was, their children were all like their mothers. The father soon lost all his interest in both wife and children. 'And now,' said he, 'if we would educate but one class of our children, we should choose the girls, for when they become mothers they educate their sons.' This is the point, and it is true. No nation can become fully enlightened, when mothers are not in a good degree qualified to discharge the duties of the home-work of education."

EXPERIMENTS WITH TURBINE WHEELS.

MESSRS. EDITORS:—The experiments upon turbine water-wheels, directed by the Watering Committee, will be commenced on the first of August. Models must be constructed to discharge about 200 cubic feet per minute, and work under a head and fall of from 6 to 12 feet. A drawing must accompany each model, and a description of the peculiarities of the wheel.

These experiments are undertaken to determine the wheel that will be best adapted (all things considered) for our "Fairmount Works." Two of the wheels approved of will be ordered at once. They will be of about 100 horse-power each, and intended to work under a head of from 6 to 12 feet, varying with the tide. Each wheel will be required to work two double-acting pumps, 18 inches diameter of cylinder, and 6 feet stroke, making from 10 to 16 strokes per minute, and pumping the water into a reservoir 115 feet above the surface of the dam.

H. P. M. BIRKENBINE, Chief-engineer.

Philadelphia, July 16, 1859.

[This letter came to hand after we had gone to press last week; but we suppose that, although the experiments are to be commenced on the first of next month, they may be continued for a considerable period of time afterwards with the same arrangements. Mr. Birkenbine appears to be favorably impressed with the performance of the turbine over the breast-wheels which have been heretofore used at Fairmount. We suppose this conclusion is founded on the comparative action of the turbine which they now have, and the old wheels. It will afford us pleasure to hear the results of those experiments.—EDS.

STEAM CARRIAGES.

MESSRS. EDITORS:—In your number for July 16, is a notice entitled, "Lee & Larned's Self-propelling Steam Fire-engine," which concludes as follows: "We think that this journey shows that there is an engine suitable for common roads, and perhaps a more extended application than fire-engine purposes may be found for Messrs. Lee & Larned's build of steam carriages." I wish to state that I am the inventor of all but the boiler and pumps of the two engines built for New York City, and illustrated on page 89, Volume XIV., SCIENTIFIC AMERICAN. I made the outlines from which those illustrations were engraved, and the working drawings from which the machines were built; and I had no assistance of any engineer in determining the proportions, although I earnestly requested leave and means to get the advice of locomotive-builders. The engine mentioned in your paper of the 16th, I am informed, is on the same plan, except that it is made narrower by narrowing the frame behind, so that, while there is room forward for the boiler, the wheels and engines are brought nearer together. This modification I advised at first, and made a drawing to show it.

Messrs. Lee & Larned have no right to build steam carriages on this plan, nor have they a right to use it for fire-engines, other than the two built for New York. They claim a right, which claim they found on an agreement which they have forfeited, and I have notified them that I intend to apply for a patent as soon as my present experiment is completed, and that they should not use my invention.

J. R. FISHER.

Paterson, N. J., July 16, 1859.

["Honor to whom honor is due."—EDS.

WASHING HORSES LEGS.—It is quite a common custom for carmen and hostlers to "founder" noble horses, by the erroneous practice of dashing of cold water on their legs when they are dirty. In regard to this practice Sir George Stephens the eminent veterinary surgeon says, "Wherever it is necessary to wash horses' legs, do it the morning. Most grooms, acting on a different principle, was them as soon as the animal comes in. I am convinced this is a bad practice. When the roads are dirty, and the weather wet, and the legs already soaked, washing can do no harm; but to deluge the legs with water the moment a horse enters the yard, heated with exercise, is to my mind, as unnatural and absurd as to jump into a shower-bath after playing an hour at cricket. My plan is, rubbing down with straw and a dry brush, and the next morning wash as clean as soap and water can make them, Pick and wash the soles as soon as the horse comes in."

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PROTECTION FROM LIGHTNING.

A recent number of the *Evening Post* contains an article of considerable length on this topic, and it is valuable in directing public attention to this question. The awful uncertainty which reigns during a thunder storm, as to the place where the fatal fiery bolt may strike, inspires general fear; hence the momentous question of protection from its dangers. Some proof has been adduced as to the ancients being acquainted with the use of lightning conductors, but there is not a line of evidence to be found in history which would lead us to conclude that they had a single correct idea in regard to the science or practice of affording protection from strokes of lightning. Thus Pliny, the Roman author, exhibits his ignorance of the subject by recommending that houses should be covered with seal-skins, that being "a marine animal which lightning could not strike." Seal skins, when dry, are non-conductors, and would be more injurious than beneficial for covering houses, and there is no difference between the skins of land and marine animals in this respect. Lichtenberg, a German writer, contends that Solomon's temple at Jerusalem, "which, during a thousand years, had never been struck by lightning, was protected by the forest of acute gilt spikes which covered the roof of the temple, and communicated, by means of metallic water-pipes, with the cisterns and subterraneous excavations of the hill on which it stood." This may really have been so, but the cause why the temple never was struck by lightning was wholly unknown to the Jews themselves; and in reading the description of the temple in the Bible, there is not a crumb of evidence in it to warrant the above conclusion.

To Franklin, our American philosopher, belongs the credit of inventing lightning-rods and providing protection from lightning. This, we believe, is not a doubtful question. It is a scientific fact, demonstrated by Franklin and others, that complete protection from lightning is provided in metal rods of sufficient hight and thickness, when they are properly arranged on houses or other structures. In proof of this, Lichtenberg describes the following remarkable case:—"At the country seat of Count Orsini of Rosenberg, in Carinthia, the spire of a church built on a mountain had been on many occasions struck with lightning; and so very frequently and with such loss of life, that during summer divine service was not performed in the church. In 1730 the spire was entirely demolished by lightning, and after it was rebuilt it was struck four or five times every year. In the same thunder-storm the lightning fell upon it no fewer than ten times, and afterwards, in 1778, it was five times struck with lightning. The fifth stroke, on this occasion, was so violent that the spire began to give way, and Count Orsini was obliged to take it down. It was rebuilt a third time, and protected with a pointed conductor; and up to 1783, when Lichtenberg writes, it had received no injury in thunder-storms. The lightning had struck it only once, and the electricity was carried off without even fusing the sharp point of the conductor."

We could cite a whole host of such instances of the efficacy of lightning-conductors, but we will just state two others, these being sufficient for our purpose. The first lightning-rod which Franklin erected was on the house of Mr. West, in Philadelphia. A short time after this—July, 1770—a severe storm visited that city, several houses were struck with lightning in the neighborhood of West's, and the fluid struck his conductor and fused its point, but the charge was conveyed to the ground without doing any damage to the building. In the month of April, 1827, the American packet-ship *New York* was struck by lightning while in the Gulf-stream, and considerable damage was done. At this time there was no lightning-conductor on the vessel, but as the storm continued next day, the captain erected a chain on the mast for safety, and such security did it afford, that when the vessel was struck by a powerful charge a few days afterwards, the electricity was conducted by the chain into the sea, and did no damage whatever.

Some have contended that lightning-rods were of no benefit whatever, because in a few instances houses have been struck which were provided with them; but in no instance has this been the case without there being some deficiency in the arrangement of the conductor. It should form a continuous metallic connection between the point in the atmosphere above and the end in the moist ground below; and it should also be insulated from the building by the interposition of non-conductors at the points where it is secured. In former volumes we have described the nature and mode of erecting conductors; we therefore need not recapitulate such information, as our object at this time is principally to urge their more general adoption, because we hear of accidents from lightning striking houses almost every day, and all because well-known means for affording protection are not more generally applied.

COMMERCIAL POWER OF COTTON.

At the meeting of cotton-planters, recently held at Macon, Ga., an interesting paper was read on the commercial influences of cotton, considered in its relations to the trade and industry of the world. It was prepared by a committee appointed for the purpose, consisting of Messrs. Rogers, Davis, Hillman, Rumph and Belvin, and the substance of it is given in the *National Intelligencer*. The committee take for their calculations the estimate of Mr. Marcy, when, as Secretary of State, in obedience to a request made by the House of Representatives, he submitted a report in which he placed the average value of the annual cotton crop of the United States at $100,000,000; the committee add to this sum $33,000,000 as the value of the cotton crop produced in other countries, thus stating the total production of the world at $133,000,000. Supposing that, of the product thus raised in diffent countries, an amount to the value of $33,000,000 is retained at home for the purpose of immediate domestic consumption—and this is about the amount, according to the best data attainable by the committee—they assume as the basis of their departure in estimating the commercial power of cotton, that at least $100,000,000 worth of the raw material enters into the commercial exports of the world. As these exports imply an import of equal value in the way of exchangeable commodities, the commercial power of cotton in its primary aspect rises to the sum of $200,000,000.

But the manufacturing countries which receive this cotton turn it into texile fabrics, which acquire a greatly enhanced value above the cost of the raw material. This increased value is moderately estimated by the committee at six times the original price of the commodity. All of this manufactured cotton is not needed for home consumption, and, according to the best tables, it is estimated that more than one-sixth of the cotton imported into manufacturieg countries is re-exported in the shape of the manufactured article, which thus lends itself anew to the promotion of commerce. The skilled labor expended on the portion thus re-reported gives to it the value of at least $100,000,000, which, determining in return an import to an equal amount, adds at least $200,000,000 to the commercial exchanges of the world, inasmuch that, in the light of these statistics, the committee estimate that the immediate influence of cotton in supporting and maintaining the commercial activity of civilized States is represented by a sum not less, in round numbers, than $400,000,000 per annum.

It is obvious that this calculation may be indefinitely extended in its industrial application and conneetions, in order to show in all its relations and bearings the politico-economical importance of cotton, considered as an element in the great web of human affairs.

VEGETABLE LEATHER.

The London *Mechanics' Magazine* states that there are very extensive works at Stepney Green, London, in which great quantities of artificial leather are manufactured. In appearance, it resembles common leather; and it is only by a very close scrutiny that the distinction between them can be detected. It is manufactured in webs 50 yards in length and 4½ feet in breadth, and is now much used for book-binding, and several other purposes for which tanned calf and sheep-skin are employed with us. It is also used by saddlers for making harness, and may be made of any thickness desirable, and is capable of being stretched or cemented. India-rubber is the principal substance of its composition, but there are other ingredients mixed with it, whereby its leather qualities are secured. The method of making it is not given, and it appears that this is kept secret; but that such a substance is now manufactured, sold and used, in large quantities, is a fact of too great importance to be overlooked.

HOW TO LOOK CHARMING.

From reading some of the popular English periodicals, the other day, we came to the conclusion that all their subscribers must be troubled with dirty faces, freckles or flesh-worms, judging from the number of recipes for the cure of such disfigurements which were in their columns. But as some of them are very good, we have selected such as we think best, should any of our readers be troubled with either of the two latter inconveniences.

One of the above editors informs a correspondent (who signs himself "A Troubled One") as follows:—"Little black specks are occasionally observed upon the nose and forehead of some individuals. These specks, when they exist in any number, are a cause of much unsightliness. They are minute corks, if we may use the term, of coagulated lymph, which close the orifices of some of the pores or exhalent vessels of the skin. On the skin immediately adjacent to them being pressed with the finger-nails, these bits of coagulated lymph will come from it in a vermicular form. They are vulgarly called 'flesh-worms,' many persons fancying them to be living creatures. These may be got rid of, and prevented from returning, by washing with tepid water, by proper friction with a towel, and by the application of a little cold cream. The longer these little piles are permitted to remain in the skin, the more firmly they become fixed; and after a time, when they lose their moisture, they are converted into little bony spines, as dense as bristles, and having much of that character. They are known by the name of 'spotted acne.' With regard to local treatment, the following lotions are calculated to be serviceable, especially No. 2, which is particularly recommended: 1. Distilled rose water, one pint; sulphate of zinc, 20 to 60 grains; mix. 2. Sulphate of copper, 20 grains; rose water, 4 ounces; water, 12 ounces; mix. 3. Oil of sweet almonds, 1 ounce; fluid potass, 1 drachm. Shake well together, and then add, rose water, 1 ounce; pure water, 6 ounces; mix. The mode of using these remedies is to rub the pimples for some minutes with a rough towel and then dab them with the lotion. Sometimes an advantage is gained by having two lotions, one for the evening and one for the morning. The best for morning application is the following: Sublimate of mercury, 2 grains; almond emulsion, half a pint; mix."

Another correspondent (Winnie Bristow) receives her advice in the shape of a reproof, for the all-knowing editor remarks:—"Had you perused our paper more attentively you would have found directions for the treatment of the spots, or black pimples, of which you complain. They should be thoroughly but cautiously squeezed, and on retiring to rest a paste, for which we are about to give directions, should be applied to the part effected. Recipe for the paste: Take 1 ounce of powdered bitter almonds and 1 ounce of barley flour; add enough honey to make the above ingredients into a paste. There is another and a still more simple remedy, which you may perhaps prefer. Bathe the spots several times a day with lukewarm water and a sponge, rubbing the sponge over a piece of yellow soap. There is a healing power in soap distinct from its cleansing properties."

Another editor publishes a recipe how to look charming, with a clear skin, bright and polished visage, as follows:—"You may generally remove freckles without using cosmetics (which are oftentimes dangerous by reason of their containing mineral agents), by merely stimulating the absorbent vessels of the skin to take them up and carry them away as refuse. Any smart stimulant will act in this way; but it has been found that the safest are taken from the vegetable kingdom. One of the best and easiest is a lotion made of a tea-cupful of soured milk and a small quantity of scraped horse-radish; let this stand from six to twelve hours, then use it to wash the parts affected twice or thrice a day."

DIRECTIONS FOR LAYING TILE DRAINS.—The ditch should be formed wedge-shaped, and dug from two and a half to three feet deep, and should be smooth on the bottom, with a proper descent. The tiles are simply placed end to end; wedged a little on the sides if necessary, to keep in line; the top of the joints covered with a sod, turned grass side down. If sods are not at hand, use shavings or straw for a covering. Water will find its way through the joint; experience will prove that you cannot keep it out. In wet lands, lay drains 25 feet apart, other locations from 15 to 25 feet. On soft bottoms, lay under the tile a narrow board, and fill up the ditch with surface earth.—*Ohio Valley Farmer.*

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SEWING MACHINES.

The following statistics regarding the sewing-machine trade in Great Britain and the United States (compiled from Patent-office reports, from the SCIENTIFIC AMERICAN, and from the reports of persons intimately acquainted with the manufacturers and users of machines in both countries) are probably as near an approximation to the facts as can be obtained:—

	Great Britain.	United States.
No. of Patents granted...	200	300
Manufacturers	5	25
Varieties of machines.....	6	30
" " Lock-stitch Machines	— 3	— 10
Machines sold weekly.....	100	1,500
Prices.....£3 to £30		£1 to £30
Lowest price for a lock-stitch machine.....	£11	£10
Whole number in use.....	10,000	100,000

A considerable number of machines have been imported from the United States into England, but the parties using them do not wish the fact to be made public, lest they should be sued for an infringement of the patent dated December 1, 1846, granted to W. Thomas, of London. This patent extends only to England, hence a large number of American-made machines are used in Scotland and Ireland. In England only one kind of lock-stitch machine is manufactured, and its lowest price is £22. In Scotland or Ireland a lock-stitch machine may be bought or imported from the United States for £11.

These are facts certainly far from gratifying to our national pride. Although the invention of the lock-stitch sewing machine was made in England by Fisher and Gibbons, the original patentees of the sewing machine, *two years before* it was patented in America by Elias Howe, Jr., yet now there are ten times more machines used in the United States than in Great Britain. Why, then, has the progress of the sewing-machine been so slow in this country? Chiefly for two reasons:—1st, There has been no competition among manufacturers; and 2ndly, prices are far higher in England than in America. In the United States as good a machine can be bought for £10 as is sold in England for £22. Competition among manufacturers has improved, cheapened, and advertised American machines. And if the trade had been conducted in this country as it has been in the United States—if the public had been permitted to select from the best machines that could have been brought into market—and if these machines had been offered for sale at a reasonable price, this trade would now be giving employment to 100,000 mechanics and operatives who are at present engaged in less lucrative employments, and for the past two or three years Great Britain would have been a gainer to the amount of, at the very lowest estimate, three million pounds annually.—*London Mechanics' Magazine.*

STRENGTH OF WOODEN WATER-PIPES.

Several inquiries have been made of us from time to time regarding the strength of wooden water-pipes; yet, until now, we have not been able to present any reliable data of this useful character. One of our correspondents (Mr. A. Wyckoff, of Rochester, N. Y.) sends us the description of a series of experiments undertaken, to test the strength of such pipes, by Daniel Marsh, Esq., C. E., of that city, and which were published in the Rochester *Union and Advertiser* under his signature and that of Professor Quimby, who was an eye witness; also several other practical and scientific men.

Pipes of various sizes were subjected to pressure so great as to burst them, but they bore a far greater amount than any spectator supposed them capable of bearing. The largest pipe tested had a bore of eight inches in diameter; the smallest had a bore of one inch and five-eighths through a pine scantling of three and a half inches. These scantling were put together in sections, and sustained a pressure equal to a head of 180 feet, and subsequent experiments showed that they would sustain a far greater pressure before bursting.

The following is the report of Mr. Marsh regarding his experiments; and the results, as placed in a tabular form, will be found very convenient for future reference by our hydraulic engineers and others:—

"I hereby certify that I have recently conducted a variety of experiments upon wooden pipes of different sizes, designed for the conveyance of water, and with the results hereinafter stated. Hydrostatic pressure was applied to the pipe by means of a double-acting piston pump, with an air chamber attached; and the amount of pressure acting upon the whole interior surface of the pipe was ascertained by means of a piston, which was cylindrical in form, and made equal in area to one square inch, and fitted to an opening in the pipe, which conveyed the water from the pump to the wooden pipe, and of a scale beam graduated so as to indicate any amount of pressure from forty to two hundred pounds. The opposite side of the beam was graduated to indicate in feet the hight of a vertical column of water which would produce a corresponding pressure. This apparatus, the accuracy of which was tested in my presence, was made by Forsyth & Co., manufacturers of platform scales in this city. Some of the pipes used in these trials were made of round logs and others of square scantling; but they were all made of white pine timber. The following is a statement of the pressure to which the pipe was subjected, in which the last column indicates the pressure at which the pipe burst:—

No. of Exp'ts.	External Dimensions. Inches.	Internal Dimensions. Inches.	Length. Feet.	Pressure Applied. Lbs. per Inch.	Water Pres. Sus.	Pipe Burst.
1	2½ Sq.	1⅝	8	86 8-10	200	
2	3½ Sq.	1⅝	8	85	195	207
3	3½ Sq.	1⅝	8	60¾	140	
4	3½ Sq.	1⅝	8	60¾	140	
5	3½ Sq.	1⅝	8	78 1-10	180	190
6	6 Sq.	2⅛	8	90	207	218
7	6 Sq.	3	8	75	172	184
8	6 Sq.	3	8	82½	190	195
9	14 D.	6	5	82½	190	
10	20 D.	8	4	86 8-10	200	
11	14 D.	6	5	73¾	170	180
12	6 D.	3	8	65 1-10	150	
13	14 D.	6	5	65 1-10	150	
14	3½ Sq.	1⅝	8	134½	310	
15	20 D.	8	4	81½	190	200
16	12 D.	4	5	73¾	170	180

DANIEL MARSH, Civil Engineer."

ELECTRIC LIGHT.

A light resembling that of the sun in brilliancy can be produced by a powerful current of electricity acting upon cones of fine carbon. Hitherto, however, it has been extremely difficult to maintain a uniformly intense electric light, owing to the change which takes place in the particles of the carbon cones, and much attention has been directed to overcome this obstacle. We have always entertained the hope that some invention would be brought out to accomplish this result, so that this splendid light might be more universally applied; but, although our anticipations have not yet been fully realized, men of science and inventors, we believe, are moving onwards with slow but sure steps to such an achievement. A late issue of *Galignani's Messenger* contains an account of an electric light which had been exhibited for several nights in the streets of Paris, drawn on a car, and it is stated to have been equal in volume to 230 wax candles, and that its cost was only about three cents per hour. The apparatus for making it was a magneto-electric machine, having 24 magnets on a wheel, revolving at the rate of 235 times per minute. The light was so pure and white that when it was thrown upon the flame of a wax candle, held alongside of a white wall, a deep shadow was produced.

The exhibition of this light was made for the purpose of showing its practical and economical character for lighting large public buildings or squares, by a single immense burner. Currents of electricity for such purposes may be generated by steam-power, and conveyed to a considerable distance by metallic conductors. The mechanism for regulating the carbon points of this light has been difficult to manage; but we trust this defect may soon be removed, and all hindrances surmounted, so as to permit its unequaled beams to be universally applied.

Currents of electricity have been used to ignite all the gas-jets of a single large building in an instant of time, by simply pressing the finger upon the key of a galvanic-battery, and an apparatus for effecting this object was illustrated and described on page 320, Vol. XII., SCIENTIFIC AMERICAN. This invention is quite different in its nature from the electric light *per se*, but for obvious reasons we cannot pass it by at present. There can be no question about the utility of such an appliance; and yet it is not in use, so far as we know, in any building in our country. Any person can appreciate the convenience of having an arrangement of mechanism by which every gas-light in a church or large hall may be ignited in an instant, by touching a key in a distant part of the building. An apparatus for doing this has both been patented and tried, and the effect was stated to have been successful; and yet it is not in common use. It appears to us, from a statement in an Edinburgh paper, that they are rather ahead of us in electric-lighting in that city, for a large public hall has been constantly lighted there for several months in this manner, and its success is stated to be beyond doubt. If this is done in Edinburgh, it certainly can be done everywhere, and ought to be generally applied.

To ignite gas-jets upon this principle, a thin strip of platinum is placed in such a manner that the gas of the burner will impinge upon it, and a current of electricity is sent along a wire to this strip of platinum, so as to heat it and ignite the gas. A piece of spongy platinum, placed in a current of coal-gas, soon becomes so highly heated as to cause combustion to take place; but when thus exposed for a considerable period of time to flame, its igniting qualities deteriorate, and it becomes useless as an igniter. To obviate this difficulty, each jet in the Edinburgh building is furnished with a small electro-magnet, connected with the burner, by which the platinum strip is lifted out of the flame soon after ignition takes place; and it is thus preserved to perform the same office over and over again for a number of years. Such an arrangement in its general features appears to be useful, and the success of the improvement seems to be decided. This is a question of considerable importance, and deserves more general attention.

A CURE FOR LUMBAGO.

The following amusing, though somewhat painful incident, actually occurred at a farm-house not a great many miles from the village of Copetown, C. W. All are subject to the ills of the flesh, and Mr. ——, a worthy and highly respected man, was very severely afflicted with that painful complaint, lumbago; so much so, indeed, that he could not stand erect, and could walk with great difficulty. As is common in such cases, it was thought desirable to rub the afflicted part with some spirituous compound; and that the application might be the more effectual, the goodman was sat with his back to the fire while the goodwife gave sweet relief—now applying the spirituous oil, now warming her palm over the cheery blaze, and again chafing the afflicted part. While thus engaged, it unfortunately happened that, without the good dame observing it, the spirit upou her hand took fire, and she, with a magnetic pass, at once set the old gentleman's back in a blaze. The effects produced were akin to the miraculous. He bounded up with a new-born energy; he yelled and rushed round the house, uttering a string of expletives totally unworthy of a deacon. Fortunately, the fuel that supplied the fire was soon exhausted. Tired and sore, the goodman was put to bed, and, we are happy to add, cured of his lumbago, and has never had it since.—*Exchange*

EXHIBITION OF THE MARYLAND INSTITUTE.—The Twelfth Annual Exhibition of the above Institute, for the promotion of the mechanical arts, will take place on the fourth day of October next, in the city of Baltimore. Mechanics, manufacturers, artists, inventors, and others who have new and useful productions to display, are cordially invited to exhibit. For more particulars as to the mode of conducting the exhibition, and applying for space to expose articles, we refer our readers to the advertisement of the managers, on another page.

The exhibitions of the Maryland Institute have always borne a high character, and we never have heard a complaint urged against their management. This redounds greatly to their credit, and affords proof of great courtesy and good judgment on the part of those entrusted with their affairs. Although citizens from all parts of our country are invited to be present (and all who come will be welcomed), yet is is on the mechanics and manufacturers of Maryland that the Institute relies for success. We therefore urge them to make the next the greatest Mechanical Fair that has ever been held in their State.

STEAM ON THE OHIO CANAL.—The first attempt to navigate Ohio canals by steam has taken place this season, and the success has been unquestionable. The *Enterprise*, built at Akron, Ohio, has made several trips, it is stated, to and from Cleveland, carrying 60 tuns and running at the rate of five miles per hour. The engine is about eight horse power, has a seven inch cylinder, with twelve inch stroke, and occupies about as much room as the stables for horses on the ordinary boats. She is propelled by a screw.

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OYSTERS.

Anomalous as it may appear, this luscious mollusk has played a tremendous part in the history of the post Christian world. The Romans, we know, were fond of oysters, and an ingenious antiquarian might found a theory upon the resemblance that exists between the Roman short-sword and the modern oyster-knife, and suggest that the love of conquest in those ancient masters of the world was nothing but a desire for the most luscious of the genus *Ostrea*—that when the Belgæ were conquered, it was not for the kingdom, but the *Huitres d' Ostend*—and that the Rubicon was crossed, not to gain the island of Britain, but simply to possess the beds of London "natives," which imbibed their succulent life on the southern shores of that happy land. The Romans never enjoyed the taste of the genuine Carlingford, as that is an Irish oyster of a later date, and may boast of its never having yet succumbed to a foreign stomach.

Whether the above theory be true or not, one thing is positive, that in Britain a certain superstition prevails that oysters are unwholesome when there is no "R" in the cognomen of the month, and this has been brought over to this country, where it is believed in to such an extent, that on the 1st of May last, the business in this city fell off just one-half in 24 hours. There is, however, a reason for this, which, while it may hold good in England, is not tenable here. On the coasts of England, the difference in the temperature is so slight that all the oysters commence spawning at about the same period, namely, the month of June; and for about six weeks before becoming in that interesting condition, and some short time after it, they are not, of course, particularly luscious or delicate to the palate (whatever they may be in individual health); they become flabby and watery, and present, when cut, a milky appearance. But as the oysters which supply the markets of our principal cities come from a coast-line of over 6,000 miles, where there is every variety of temperature and habits of life, and the spawning season varies for every species, we can have oysters all the year round, good, succulent and juicy; and, at the same time, have those which it would be quite as unhealthy to eat in September as others in May. The only way to be sure of getting a good oyster is to go to a good dealer and pay a good price; and, trusting to his judgment, we may be sure that when we call for a "half-shell," we shall not be swallowing a crop which ought to have remained two or three years reposing on its rocky bed.

"But what is an oyster?" asks one of our readers, anxious to obtain some knowledge of his anatomy and habits; and, of course, all our other readers smile, and say: "I know—I've eaten hundreds. It's a—a—a—humph! let—me—see! Well, now, what is it?" or perhaps they could give the definition that a small cockney (a recent importation) gave us on one occasion, when we put the question to him, as he was looking earnestly into Downing's stand. "Ha hoyster," says he, "is ha fish; e's ha shilling ha dozen. Yer buys 'im hin the Fulton market, hand wery good 'e his." We gave him a dozen, thankful for the information.

To fully answer the question, we must have recourse to an illustration.

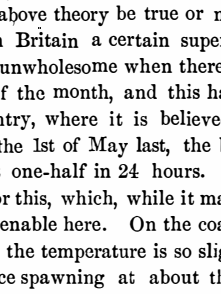
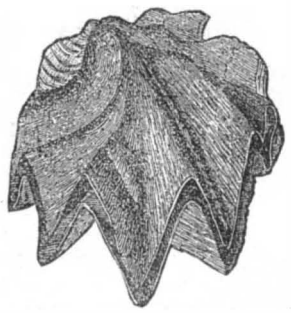


DIAGRAM.

An oyster is a mollusk or soft-bodied animal, provided with an external skeleton or shell, of hard calcareous matter. This sometimes takes queer shapes, as in the species known as the coxcomb-oyster, which inhabits the Indian ocean; and a near neighbor of his has a still more odd outward configuration—namely, the hammer-oyster, on which two appendages to each side of the shell grow to a great length, and give it the appearance of a pick-ax or hammer. The class of molluska in which the oyster is placed is the *Lamellibranchiata*, and his near relations are the scallop and muscle. These *lamellibranchs* are so called because they all respire by gills, in the form of membranes attached to the mantle or covering of the body. To thoroughly understand the structure of these soft-bodied animals, take an oyster, and, after opening it, let the reader refer to the accompanying diagram of a *lamellibranch*, and by a careful dissection with a pen-knife, he can see the shell-muscles, *a*, by which the shell is opened or closed; *b*, the ganglia or centers of the nervous system; *c*, the heat by which a circulation of the fluids of the body is kept up; *d*, the liver; *e*, the mouth; *f*, the labial tentacles or lips by which food is conveyed to the mouth proper; *g*, the foot (which will not be found in the oyster, but is present in the muscle); *h*, the stomach or digestive apparatus; *i*, the intestine; *k*, the anus; *m*, the mantle or covering of the body; *n*, the branchiæ or gills; *o*, the siphon through which liquids, air and food are conveyed into the body; and *p*, the siphon through which the same are thrown off from the body.

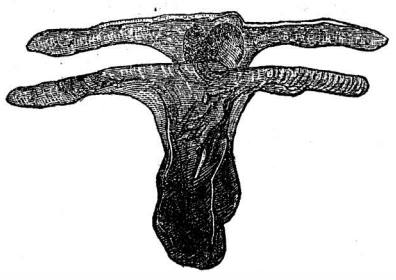
The fry of the oyster called "sprat," is a white gelatinous mass from which the young oysters rapidly free themselves, and fix themselves to the bed of the river or sea by the most convex shell. Most shells of this tribe are pearly in the interior; and as true pearls are merely morbid growth, they may all produce pearls of various



COXCOMB OYSTER.

qualities. The formation of pearls is caused by the introduction of irritating substances, such as grains of sand, between the mantle and the shell. The irritation causes the animal to cover the obnoxious object with layers of pearl, which generally attach the foreign body to the interior of the shell. The Chinese produce pearls artificially, by placing substances in such a position; and on one occasion we saw a shell to the interior of which a small metal image was attached by the pearly secretion. The pearl-oyster, which is found in the Indian and Pacific oceans, at a depth of about 12 fathoms, furnishes the finest pearls, and the shells are known to us as mother-of-pearl.

The American oyster, although possessed of no greater facilities for locomotion than any other, is yet a great traveler, and like all his countrymen, partial to change



HAMMER OYSTER.

of scene, provided it be not too far north, as he does not like cold, and has a natural antipathy to ice; so that he attains the greatest perfection in such a climate as York river, Va., from which he is transported when young to some favorable ground (or water) on the coast of Staten Island, where he is dumped overboard and allowed to grow until wanted to supply the cravings of human beings. There are about 150 schooners, of 100 tuns burthen, employed as his method of locomotion, and he has at his command about 600 men. These northern waters are said to improve his flavor, and fit him for his entrance into polite—not society, but—stomachs. There is an excellent seed-oyster raked up from a small bay near Sing-Sing, on the Hudson river, which, when it is about the size of a quarter, is transferred to Long Island Sound, and called "East river." The trade in oysters is immense, 500,000 being sold weekly in Fulton market, and as many as 90,000 having been retailed from one stand in that shellfish-ic locality in six days!

A distinguished foreign writer on dietetics, says:—"The oyster is a species of food, combining the most precious alimentary qualities. Its meat is soft and delicate, yet has a peculiar firmness also. It has sufficient flavor to please the taste, but not enough to excite to surfeit. Through a quality peculiar to itself, it favors the intestinal and gastric absorption, mixing easily with other food, and assimilating with the juices of the stomach, it aids and favors the digestive functions. There is no alimentary substance, not even excepting bread, which does not produce indigestion under certain given circumstances, but oysters never. This is a homage due to them. They may be eaten to-day, to-morrow, forever, in profusion; indigestion is not to be feared, and we may be certain that no doctor was ever called in through their fault. Of course, we except cooked oysters. Besides their valuable digestive qualities, oysters supply a recipe not to be despised in the liquor they contain, which is produced by the sea-water they have swallowed, but which, having been digested, has lost the peculiar bitterness of salt water. The oyster-water is limpid, and slightly saline in taste; and, far from being purgative, like sea-water, it promotes digestion." According to the theory of an anti-vegetarian friend of ours, the oyster can be eaten by the most humane. Meeting a vegetarian one day, he inquired: "Do you abstain from animal food because you object to take life?"

"I do," was the reply.

"Then," said our friend, "come and have an oyster-supper. You have no occasion to kill them; you can swallow them alive."

Vegetarian vanished.

For much of the statistical information in this article we have to thank the New York *Tribune*, which a short time ago gave the statistics of the oyster-trade in this city.

MORE WONDERFUL THAN THE MAMMOTH CAVE.

Dr. D. L. Talbot, in commencing a series of articles for the Fort Wayne *Times*, in regard to the Wyandotte Cave, make the following comparison between Wyandotte and Mammoth Caves:—"Wyandotte Cave, one of the most extensive and remarkable in the world, is situated in Crawford county, Indiana, about 25 miles below New Albany, on Blue river. I have called it a remarkable cave. The Mammoth Cave of Kentucky has hitherto been designated as the greatest known cave in the world. It may startle your scientific readers to hear me assert the fact, that there is one stalagmite alone in Wyandotte Cave more massive than all the stalagmites and stalactites in Mammoth Cave put together. This cave I have surveyed and mapped a distance of 25 miles in length, and there numerous avenues. I have never penetrated to their end, although I have visited the cave for scientific and other purposes, over a dozen different times, spending on one visit four days and nights within its darksome halls. The Mammoth Cave is distinguished more for its vastness than its beauty; the Wyandotte for its great extent, its mammoth hall, its lofty ceilings, reaching frequently to the height of 267 feet, and especially for its numerous and natural fountains, which almost continually meet the eye in every direction. A portion of this cave has been known and visited for over 40 years. This portion is about three miles in length, and is termed the Old Cave. In 1850 a new door from within the old cave was discovered, which extended the caves united to about 12 miles in extent. In 1853, a still newer discovery of ingress was accidentally made, which has added eight or ten miles thereto, and disclosed a plan of formation more extensive and more beautiful than heretofore known. The cave contains every kind of formation peculiar to the Mammoth and other caves, besides some unique formations found only in the Wyandotte Cave."

REMARKABLE PRESERVATION.—Some thirteen years ago, says the Freeport (Ill.) *Journal*, the mother of John W. Rogers (at present a resident of Jo Davis county) died and was buried in the town of Kent, in this county. Last month her children had her remains taken up and removed to Nora Cemetery, and what was their surprise to find them in a complete state of preservation. Her body was a solid petrifacation, her features being perfect as in life, only a shade or two darker.

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SELLING ARTICLES AT FAIRS.

A correspondent directs our attention to the custom which has prevailed of late years at agricultural fairs, of prohibiting persons from selling articles on the exhibition grounds. He contends that this is a most unwise policy on the part of the managers of such shows, as well as an injury to many exhibitors. In this opinion we heartily agree with him. We believe it is for the mutual advantage of all persons concerned that a free exchange and sale of commodities on exhibition be permitted. The very idea conveyed by the term *fair* is a place where buyers and sellers meet for the purposes of trade. Much good may result from the permission of sales at fairs, while we cannot see what benefit can be secured by forbidding such exchanges. Our correspondent puts a case thus: "Suppose A, B and C, coming from a distant part of the country, have a yoke of oxen and a team of mules with which they wish to part, and suppose two other persons, from another part of the country, have cows or machinery with which they wish to part, in order to buy oxen and mules. Here these parties meet, and have a good opportunity of making exchanges for their mutual benefit, but the laws of the fair forbid such action; hence, they have to separate, mutually aggrieved."

At agricultural fairs, there are very numerous opportunities for persons purchasing articles or animals, and of selecting from a very great variety; so that the supposition is, they are more likely to get suited with what they want than at private sales. As a remedy for the evil complained of by our correspondent, we suggest that a new feature be engrafted on every mechanical and agricultural fair, namely, that one day or more at the conclusion of such exhibitions be devoted exclusively for the public sale and delivery of articles; not intending by this arrangement to forbid previous private bargains, as usual, between parties. The directors of such fairs cannot expect exhibitors to come from a distance unless they are allowed to sell, if it were for no other purpose than to provide means to pay their expenses. The permission of free sales at all mechanical and agricultural fairs is beneficial to all classes, and injurious to none. We therefore hope that wherever sales have been prohibited at fairs, such restrictions will hereafter be removed, and that every person present will be permitted to sell, buy or examine articles—all to be conducted "in decency and in order."

A SUBMARINE LANTERN TESTED.

The Norfolk (Va.) *Day Book* records an interesting trial of Gould & Lamb's submarine lantern, which came off in presence of a Board of Examiners, appointed by the Navy Department. on Thursday, the 14th inst., at Portsmouth navy-yard. It says:—"The lantern was lowered to a depth of 16 feet in a reservoir of water inside the yard, when it continued to burn for half an hour. The day being oppressively warm, and the Board of Examiners and inventors exposed to the rays of the burning sun, further experiments were postponed until 9 o'clock at night, when a second trial was made from a barge at the foot of the commodore's wharf. The lantern was first lowered down to the bottom of the river, then separate tests made as to the exact distance rays of light could be seen from the surface. Also, the distance light could be thrown so as to distinguish accurately distinct objects. An oar, lowered to the depth of six feet from the lantern, the lantern being sunk four feet, was so clearly seen that the grain of the wood was distinctly visible. The rays of the light were visible upon the surface of the river when the lantern was sunk to the depth of 12 feet. These experiments were made in thick, muddy water, and, except that the Board were satisfied as to the principles involved, the lantern could have been kept burning under water for three hours. The same principles which govern at at a depth of 16 feet will prove equally successful at a depth of 90 or 130 feet. This lantern, in connection with a submarine armor, is destined to open up a new field of enterprise in submarine explorations for lost treasure."

PATENT FOR TURNING IRREGULAR FORMS.—As several correspondents have recently made inquiries as to the period when the extended patent of the ingenious Thomas Blanchard, of Boston, expires, we answer for all concerned, that it was extended for 14 years by special act of Congress, January 20, 1848, and will therefore expire in the first month of 1862.

RED LEAD AND GRAPHITE FOR IRON SHIPS.

MESSRS. EDITORS:—The writer has read with much interest the article on "Red Lead on Iron Ships" in your editorial columns of the 9th inst. The fact there stated of red lead being unable to protect ships' bottoms has long been known to me; also its inferiority, in every particular, to some other paints. But coming, as it does in this case, in an authentic and authoritative form, the matter is more likely to arrest attention and a worthless paint be discarded for some other that is reliable. I am positive that in graphite will be found those qualities and attributes which will effectually protect iron ships against corrosion. Being the purest of carbon, graphite is antiseptic and anti-corrosive; it is also anti-attritious in many respects. If one side of an iron ship be painted with graphite and the other with red lead or any paint not partaking of the character of graphite, the first will be found, after a voyage, to have been more preservative and more durable. Such have been the results even when verdigris was on one side and graphite on the other; and graphite, from its qualities, also keeps a clean bottom. After a comparative trial of graphite, red lead and other paints, Mr. Stevens, of Hoboken, N. J., found the former far superior to them all for preventing rust, for adhering to iron, and for facility in applying it. He discarded all other paints and used graphite for coating the iron steam battery which has been so long building at Hoboken for the United States government.

I——.

PHOTOGRAPHY AND THE ARTS

We have another new application of photography to record. The Hythe (England) *Gazette* states that a series of interesting experiments have lately been made by Lieut. Walker, of the 79th Highland Regiment and of the School of Musketry Staff, in the application of photography to the art of musketry, with a view to obtain a true copy of the target-practice of any number of men at one or more targets. Formerly, the marks on the target were copied by hand (which was a tedious and troublesome process), in order to send the results to the superior officer, who was not present at the practice. Now, by means of the chemical influences of light, the impression made by each shot upon the target's surface is copied upon paper; and thus a true record is kept of the soldiers' practice for each day, so that no false return can ever be made.

SIXTY-FOUR POUNDER BURST.—A shocking accident, says the Washington *Intelligencer*, took place Thursday morning, 13th inst., at the navy-yard in that city. It was the bursting of a heavy ship's gun, which was undergoing trial on the battery-platform for the purpose of fixing her range, &c., under the general direction of Captain John A. Dahlgren. The gun was made at the West Point Foundry, N. Y., in 1850, and was passed as good, carrying all the usual marks of soundness. Previous to the above date it had been fired only 24 times, and followed on the practice-battery one of the 11 inch Dahlgrens. It was first fired soon after 10 o'clock, with the usual service charge of 16 pounds of powder and a 64 pound shot, and made a recoil several feet beyond the usual amount; when, being again fired, it burst with terrible effect, instantly killing two of the 16 men in attendance, and wounding eight or ten of the others, five of them so seriously that other deaths may be expected.

TAKING OBSERVATIONS BY BALLOONS.—Several of our daily city papers have, within a few days, published the suggestions of an English gentleman for taking observations by a balloon, attached to a wire rope, for allowing it to arise from the ground and for retaining it at any elevation, for the purpose of reconnoitering an opposing army. They have all presented the matter as something exceedingly new and ingenious. In our last issue, we described the very same method of balloon-surveying, and stated that it had been practiced more than 60 years ago by the French army of the old republic. Mr. John Wise has also made several ascents in the same manner, so that the novelty of the thing to us consists in our cotemporaries' presenting it as something novel.

Liquids are held together by cohesion, which varies in power, as is seen by the different sizes of drops of water, oil, syrups, or spirits, when thus measured out.

SUGGESTIONS TO INVENTORS.

MESSRS. EDITORS:—The SCIENTIFIC AMERICAN comes to our prairie home in its new dress, with something more than its usual welcome. It betokens a healthy condition from a just appreciation of its merits. It is a journal which we think should be more generally diffused among agriculturists, having, as it does, their interests and advancement at stake in common with other sciences and arts.

The inventor has already done much to assist the farmer in his efforts to lighten them and economize time and labor. Much still remains to be done. We shall soon, at our next State fair, have the experiment made which will decide the feasibility of plowing by steam, an event we think likely to be successfully accomplished by Fawkes.

The steam plow will fill a vacuum long felt by large farmers in the West; but there are others of moderate means who need another improvement in the plow line, which at present, in our opinion, opens a fine field for inventors. We allude to the gang plow, to be worked by oxen or horses. Jesse Frye has, perhaps, approached nearer to the desired implement, in his improved gang plow; but there are many objections to it to be overcome before it can be brought into general use.

We want a gang plow that will work well, of easy management, economising time and labor, and efficient in every respect. Such an implement will be a fortune to its inventor.

We want implements to economise time and labor in the harvest field, that will not give out under hard work in a "heated term," nor give our wives and daughters increased labor in the culinary department when the mercury stands, as it has the past week, *at and over* 100° *in the shade.* A machine that will not get the sulks, and leave the work in the harvest field, on account of some imaginary infraction of *rights* by the "boss," thus leaving us to hunt up other hands at such a busy time. Murray, Van Doren & Glover's reaper and stacker, and the binding apparatus recently illustrated in your journal, are steps in the right direction, but yet not complete. Cannot some ingenious inventor get up a *light, strong* machine that will cut and bind, or cut, bind and stack in a secure or speedy manner, ten to twenty acres of grain per day, and which the aforesaid machine will not cost the farmer a fortune to buy? One reason—the principle one—why farmers do not buy more agricultural machinery is on account of the high price usually asked for such description of manufacture. Labor is scarce and high in the West. Here we need implements that will enable the farmer, with his usual farm-hands, to put in, cultivate and harvest his crops without extra hiring.

We are willing to pay a fair price for such machine-help, and if we cannot do better, we must do as the Eastern States are doing—quit the raising of wheat, and turn our farms to grazing or dairy farms.

We cannot waste mental and physical power in the unceasing drudgeries of farm-work, and raise wheat at 25 cents per bushel, the price now given at Assumption station, on the Illinois Central Railroad.

The low prices are caused by speculation, but give us, Messrs. L'Inventeurs, some agricultural implements that will lessen our labor, economize our time, and give our brains a leisure hour to peruse scientific and agricultural papers, and we will defy speculators.

H. HINKLEY.

Prairie Cottage, Assumption, Ill.

DEATH OF A KING.

By the late news from Europe, we are informed that Oscar, King of Sweden, died at Stockholm on the 8th of this month, aged 60 years. This monarch was the son of Bernadotte, who was formerly one of Napoleon the Great's generals, who had risen from the ranks by his courage and abilities. He was solicited to become King of Sweden by the people of that country, their old line of kings, descended from the great Gustavus Adolphus, having become obsolete. Napoleon made many kings out of his generals and relations, but only Bernadotte, one of his old sergeants, kept his throne after the fall of the "great captain." King Oscar was a good sovereign; his views were liberal and just, and many excellent reforms in law and policy were carried out during his life, at his own earnest solicitations.

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IMPROVED GRINDING MILL, CORN-SHELLER AND STRAW-CUTTER COMBINED.

Farmers, and all persons who live in isolated positions where they have to perform all operations requisite to prepare food for themselves and their cattle, will find, in the subject of our illustration, a mill which, in the one machine, combines all that is necessary to perform such duties.

Fig. 1 is a perspective view of the exterior of the mill, Fig. 2 is a vertical section through the center of the mill and parallel with its shaft, and Fig. 3 is a transverse vertical section of the cob-crusher. A is a rectangular frame and B is a box that is placed in the frame, A, and is formed of cast-metal side plates, *a a'*, end plates, *b*, and top and bottom plates, *c c*. A shaft, C, is placed in proper bearings, *d*, and it runs through the center of the whole machine, being prevented from sliding by means of shoulders, *e e*.

The outer surfaces of the plates, *a a'*, of B, have circular recesses, *g*, made in each, and these recesses have grinding surfaces, *h*, cast with them, and each recess, *g*, has two grinding surfaces, there being concave surfaces, *i i*, encompassing the shaft, C. These concaves are precisely alike and have an eccentric position relatively with their plates, *h*, and their shaft.

On the shaft, C, are placed two circular disks, D D', the inner surfaces of which are corrugated or formed into cutting or grinding surfaces, *k*, similar to those on the side plates, *a a'*, One of these plates, D, is placed eccentrically on the shaft and the other concentrically, and they are both provided at their inner sides with concaves, *l m*, all of which, *i i l m*, being provided with crushing or cracking teeth to form coarse grinding surfaces. On each side-plate, *a a'*, an aperture, *n*, is made in the concaves, *i*, and these apertures communicate with the two inclined passages, *o*, in the upper part of the box, B, that lead from a suitable hopper. The plates, D D', are secured to C by keys, E F, which are formed by attaching projections, *p*, to the ends of prongs on bars, *q q*, which are fitted in longitudinal grooves in C, the outer ends of the prongs being attached to heads, *s*, through which the screw rods, *t*, pass into the end of C. There are two projections, *p p*, on each prong, *q*, of each key, and they fit in the collar hubs, *t'*, of the disks, D D', and therefore not only secure the disks to the shaft, but also serve as adjusters, for, by turning the screw rods, *t*, the plates may be moved in or out. This movement of D D' is controlled by annular flanges, G, which are secured to the side-plates, *a a'*, and overlap, D and D', abutting against annular flanches, *u*, on the outer surfaces of D D'.

To the outer surface of D, a knife, H, is attached, and it has a somewhat tangential position with the hub or collar, *t'*, the outer edge of which has a flanch, *v*, upon it which fits in a recess in the inner part of a sliding feed-box, *a'*, which is placed and fitted between guides on the upper part of the frame, A.

The outer surface of the plate, D is toothed. This toothed surface, *b'*, is concentric with the shaft, C, and the hub, *t'*, of said plate, D, is encompassed by a flanch, *c'*. On the shaft, C, a metal cylinder, I, is placed. This cylinder is formed of sections or staves, *c''*, the ends of which are secured in suitable heads, *d'*, and the inner surfaces of the sections or staves, *c''*, are toothed, as shown at *e*, see Fig. 3. Within the cylinder, I, and on the shaft, C, a cylinder, J, is secured. This cylinder is also formed in sections or of staves, *c''*, and is provided with teeth, *f*, as shown clearly in Fig. 3. The cylinder, J, however, is not quite so long as the hollow cylinder, I, which encompasses it, and the cylinder, I, therefore, is allowed a certain degree of longitudinal adjustment over the cylinder, J. At the inner end of the cylinder, J, there is a cylindrical box, *g'*, which encompasses the annular flanch, *c'*, on the outer surface of plate, D, and also encompasses an adjustable cap, *h'*, which is placed within the box, *g'*, and has openings, *i'*, made in it. The partition plate of the box, *g'*, and cylinder, I, is also provided with openings, and the cap, *h'*, has a handle, *j'*, attached to it, which handle projects through a slot in the box, *g'*, and admits of the openings, *i'*, in the cap and partition plate being thrown in and out of register as may be desired.

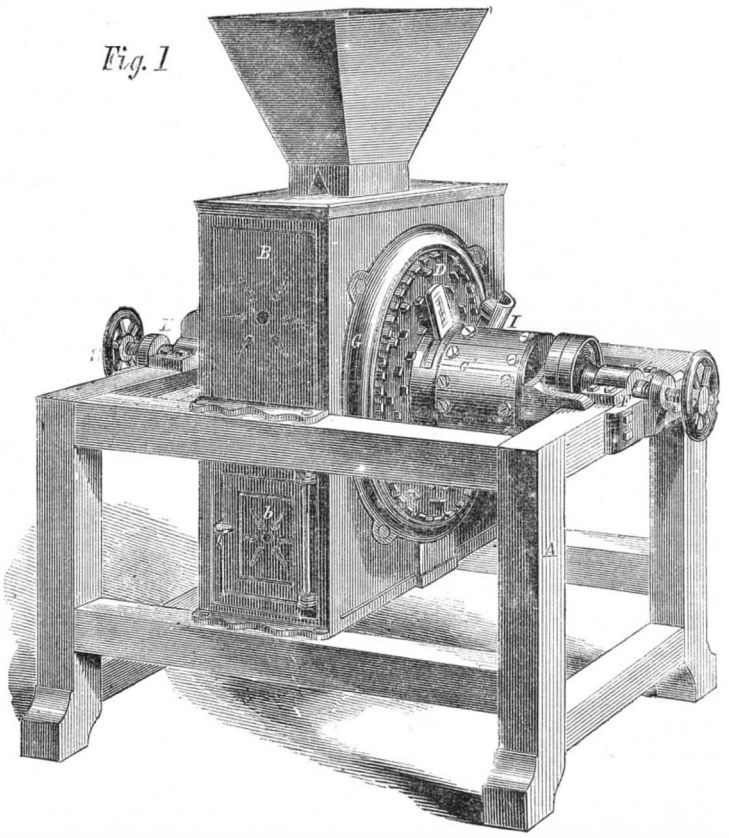
At the outer side of the box, *g'*, there is a spout, *k''*.

The cylinder, I, is provided with a hopper, *r'*, at its upper side, and a door at its under side, and the cylinder is held in proper position so far as turning is concerned, by means of pins which are fitted in holes in a plate, K, attached to the frame, A.

On the shaft, C, driving and working pulleys, *x*, are placed. The operation will be readily seen. The plates, D D', and outer surfaces, *h*, of the sides, *a a'*, of the box, B, form eccentric grinding mills, the concaves, *i i l m*, by their action, preventing the mill from choking or clogging, and ensuring a proper feed and discharge. The flour, meal, or ground material is discharged at *a''*, and the plates, D D', are actuated so as to grind finer or coarser by turning the screw rods, *t*, the keys, E F, being moved thereby, and the projections, *p*, securing the plates to the shaft, C, and also serving as a means to move said plates back and forth thereon, the projections, *p*, fitting in recesses in the hubs or collars, *t'*. When grain is to be ground it is fed between the grinding surfaces of the plates through the spouts, *o o*. When corn and cob is to be ground the ears are fed into the cylinder, I, and crushed by the action of the teeth, *e f*, and the cap, *h'*, is so adjusted as to allow the openings, *i' h''*, to register with each other and permit the crushed ears to pass through said openings between the concaves, *i l*, of the plate, D, and side, *a'*. If the ears are to be crushed without being ground, the cap, *h'*, is turned so as to cut off the communication between the cylinder, I, and the yielding plates mentioned, and the door is opened to allow the crushed ears to pass out. The cylinder, I, in consequence of being longer than the cylinder, J, is allowed to be adjusted or moved with the plate, D, and is graduated to grind coarse or fine without affecting the operation of the crusher. The spout, *k''*, serves to guide ears of corn down to the outer toothed surface, *b'*, of the plate, D, and retain opposite the center of said surface and in a slightly inclined position, so that ears may be shelled by the toothed surface, *b*, as the plate, D, rotates, the part, *n'*, of the spout yielding or giving to take in different sized ears. The spout, *k''*, in consequence of being in the position as shown and described, causes the ear to be acted upon in a peculiar manner, to wit, the surface, *b'*, rotating the ear and shelling the corn from it, and at the same time feeding it down out of the tube so as to assist their discharge and prevent the possibility of the spout being choked or clogged. It will be seen that when the plate, D, is adjusted for grinding purposes the spout, *k''*, and cylinder, I, move with it, so that the relative position of said parts are always the same and corn may be shelled at any time. In order to produce the forward movement of the cylinder, I, on shaft, C, the prongs or bars, *q q*, of the key, F, are provided with additional projections, *p*, which are at the outer end of cylinder, I. The feed-box, *a'*, and knife, H, which is at the outer side of plate, D', forms a straw-cutter, and this device may be used at any time, for the adjustment of plate, D', is compensated for by the sliding of box, *a'*, which is effected by the fitting of the flanch, *v*, in the groove, *u*, of the box, *a'*. The lower part of box, B, may serve as a receptacle for tools of various kinds, the box being provided with a door at one end. By having the cylinders, I and J, formed in sections they may be readily repaired, and any portion removed and replaced by new when occasion may require.

The inventor is Philander Perry, of Troy, N. Y., and any information which is not included in the preceding description he will be happy to furnish. The patent is dated April 19, 1859.

Fig. 1



PERRY'S MILL, CORN-SHELLER AND STRAW-CUTTER.

Fig. 2

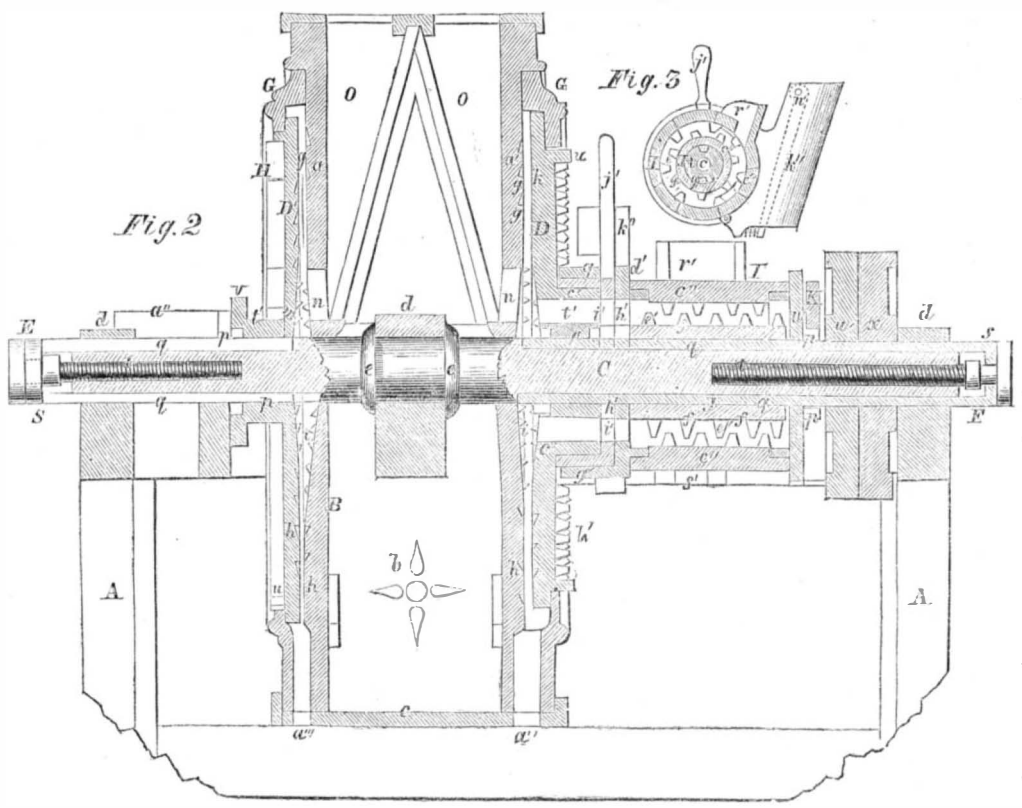


Fig. 3

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Scientific American.

MUNN & COMPANY, Editors and Proprietors.

PUBLISHED WEEKLY

At No. 37 Park-row (Park Building), New York.

O. D. MUNN, S. H. WALES, A. E. BEACH.

TERMS—Two Dollars per nnum.—One Dollar in advance, and th remainder in six months.

Single copies of the paper are on sale at the office of publication, and at all the periodical stores in the United States and Canada.

Sampson Low, Son & Co., the American Booksellers, No. 47 Ludgate Hill, London, England, are the British Agents to receive subscriptions for the SCIENTIFIC AMERICAN.

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VOL. I., No. 5.....[NEW SERIES.].....*Fifteenth Year.*

NEW YORK, SATURDAY, JULY 30, 1859.

THE FATHERS OF PHILOSOPHY.—V.

ONG did the followers of Pythagoras mourn, in an undemonstrative but classic manner, the decease of their founder and one who was for so many years their teacher. They did not, however, forget his principles, but seemed to think that the best monument they could erect to his memory was dedicating their own lives, as he had done his, to disseminating his doctrines and living up to his strictest regulations. They seem, with apostolic spirit, to have spread over the cultivated world, returning to the seats of learning the knowledge which they had indirectly derived from them, with interest and additions. Some of these traveling philosophers found their way to Ephesus; and two of them especially undertook to teach and bring forth the founder of an improved system, which, however, had the Pythagorean one as a basis. The teachers were Xenophanes and Hippasus, and the pupil was—

HERACLITUS.

This philosopher was born about the year 400, B. C., and in early life manifested a great desire to study the abstrusities of nature; and so well did he profit by his powers of observation and reasoning faculties that he was offered the chief-magistracy of Ephesus, an honor which he immediately declined, and being some time after discovered playing with boys in the Temple of Diana, he was reproached for not being employed more to the profit of his fellow-citizens. "It is surely better," he replied, "to pass my time with children than to govern the corrupt Ephesians." There is no doubt that he was of a moody temperament, and he gradually began to entertain such a supreme contempt for the follies and vices of mankind, that he retired to a mountain-cave; and there, hermit-like, wandering amid the solitude of nature, he gathered the natural produce of the earth, and lived on herbs and simples. Darius, King of Persia, hearing of his learning and extraordinary habits, invited him to his court, and was surprised to find his invitation treated with contempt. This ascetic mode of life brought on a dropsy, and finding that the medical advice of that day gave him no relief, he endeavored to restore himself to health by shutting himself in a close stable with the oxen. He is supposed to have died at the age of 60, but there is a mystery as to the time and manner of his decease.

Heraclitus has been called the "Crying Philosopher," from a fable that he was always shedding tears for the follies of mankind; but we think that he little deserves the lachrymose title. He was excessively conservative, as he wrote his treatise on theology as obscurely as possible, in order that it might not be comprehended by the vulgar or common folks. He maintained that *fire* was the first principle of all things, and that by the combination of this principle with certain indivisible atoms, simple or elemental in their nature and always in motion, all material things were produced, which doctrine was a dim foreshadowing of the Atomic Theory of John Dalton, and the theory of latent or insensible heat now so universally believed in by philosophers. He it was who first enunciated to the world the great idea that "reason, by means of the senses, is the judge of truth;" and he declared that the end of human life is to enjoy happiness, and to attain this, we should have as few wants as possible, and always recollect that the life of the body was the death of the soul, which never gains its true freedom until it is delivered from its earthly tabernacle and can ascend into the realms of glory. The first virtue, he argued, is temperance; and the first lesson of wisdom is to follow nature; lastly, he thought it was of more importance that men should learn to know themselves than that they should acquire great learning. We will now, for once, break through our chronological order, and leave until next week an account of Anaxagoras, passing on to one who is supposed to be the very contrast of Heraclitus, namely, to—

DEMOCRITUS, OF ABDERA

He was born in the Thracian city of Abdera (whence he takes his name), in 460, B. C., and had for his contemporaries Socrates, Zeno, Protagoras, and other wise and learned men. His father was a rich man, and provided large sums of money for the entertainment of the army of Xerxes, on the return of that monarch to Asia, in exchange for which the Persian king left in Abdera several Chaldean magi. These magi would naturally become frequenters of the house of Democritus, and from them, no doubt he learned astronomy and imbibed some theologic notions. On his father's death, he traveled through Egypt, Persia, Ethiopia, and, some say, India, gathering learning and wisdom as he went along. On his return to his native city, having spent all his money, he dreaded an Abderian law, which enacted that every person who had wasted his patrimony should be deprived the right of sepulture; and to avoid this, he delivered lectures on philosophy to the citizens, which not only brought him in a large amount of money, but great fame. We believe that this is the first instance of any one lecturing for money; therefore, Democritus may be regarded as the patron saint of Yankee lecturers. He like his predecessor, was offered public honors, and, like him, refused them, preferring rather to retire from the world and contemplate his fellow-men. Seneca tells us that whenever he appeared in public, he expressed his contempt for the follies of his race by laughter, and hence he is called the "Laughing Philosopher;" but this story is doubtful. His better name of "Derider" is more probable, as it is likely that one so learned as himself should treat with contempt the petty prejudices and follies which he saw around him.

Democritus taught that the sun and moon are composed of light particles, revolving about a common center from east to west. In other things he but enlarged and extended the atomic idea of Heraclitus. His morals were, however, very fine; and the following sentences are a few from many which are attributed to him:—"He who subdues his passions is more heroic than he who vanquishes an army; yet there are men who, whilst they command nations, are slaves to pleasure." "The sweetest things become bitter by excess." "Do nothing shameful when you are alone; revere yourself more than all other men." "Every country is open to a wise man, for he is a citizen of the world." "A cheerful man is happy, though he possesses little; a fretful man is miserable in the midst of affluence." "One great difference between a wise man and a fool is, that the former only wishes for what he may possibly obtain, the latter desires impossibilities." "Rulers are chosen not to do ill, but good." Juvenal summed up, in a few lines, the contrast of these two great men; and, as Dryden has translated them very well, we can give them in rhyme:—

> "Will you not, now, the pair of sages praise,
> Who the same end pursued by different ways?
> One pitied, one contemn'd the woful times;
> One laughed at follies, and one wept o'er crimes."

CIVILIZED PLAGIARISM.

We confess to a certain reverence for "old fogyism"—that is to say, we believe in honor among all men as well as among thieves; we also believe that men of genius have a right to at least *credit* for their works, Let us illustrate our meaning. Suppose we write an article and publish it in the SCIENTIFIC AMERICAN; if we put our individual name at the bottom of it, we expect that those newspapers which copy the article into their columns will also copy the author's name; if there is no name to copy, we ask in courtesy that credit be given to the original source from which the article was taken, namely, our own paper. We regard the petty pilfering of other men's brains as the meanest kind of work; it is a degrading, not an elevating process. If, then, *we* expect this to be done to ourselves, how much more courteous should we be to the foreign stranger who gives us information or enjoyment; should we not at least acknowledge him, and not attempt to appear witty, intellectual or original with other men's thoughts, ideas, and genius as our stock in trade. We are not at the present time thinking of ourselves, but we wish, as members of the American press, to express our unqualified disapproval of the plagiarism of art and literature exhibited in *Harpers' Weekly* for the week ending July 23, 1859, which said periodical is called by the proprietors "a Journal of Civilization." Queer civilization! Let us enumerate the plagiarisms. On the first page is a poem called "Magenta," with a beautiful illustration; there is no credit to author or source—the author is Tom Taylor, and the source is the new London hebdomadal entitled *Once a Week*. This is followed by a story by Charles Reade (illustrated by an engraving), extracted from the same source as the above, but no credit given. On the third page is an article called "Snakes and their Prey," neither author nor source being acknowledged; the former is Arthur Clarence and the latter *Once a Week*. On the tenth page is an illustrated article from the same source, by G. W. Dasent; it is called "Audun and his White Bear," but both author and source are, as usual, ignored. Then comes "An Evening at a Milan Café," which is from *All the Year Round*, conducted by Charles Dickens; no credit is given, but the title is changed, the original one being "Viva L'Italia!" and the first sixteen lines are omitted. These two articles make two pages of the *Weekly*, less about one-third of a column. Then there is "A Tale of Two Cities," by Mr. Dickens, for which we are happy to say Messrs. Harpers *do* pay.

Out of nine articles in the first number of *Once a Week*, four are transferred to the *Weekly's* columns. We simply say that this is not fair play to our English cousins, and an American "civilizer" should be far above it.

In an article which we have taken from *Once a Week* we are only too happy to give credit to the author and source, because we think that both deserve popularity, and we have too much respect for ourselves to gain a reputation on what another has written.

VERY IMPORTANT DECISION.

[Telegraphic despatch to the Associated Press.]

BALTIMORE, Wednesday, July 20, 1859.

In the case of Horace H. Day et al. agt. Stellman, et al., which lately occupied the court here for two weeks, his honor, Judge Giles, this morning, rendered, at the close of a very able opinion, a decision in favor of Mr. Day on all the points presented, holding that, under his agreements with Goodyear, Mr. Day has an exclusive monopoly of elastic goods containing vulcanized rubber. A perpetual injunction was granted. Some fifteen other suits were depending here upon this decision, in all of which perpetual injunction will issue.

[This is one of the cases in which the Judson party, who claim title to the Goodyear patent under a grant *prior* to Day's, did not appear by counsel, so it will be perceived that this only affects the question between Day and certain alleged infringers of the Goodyear patent within the District of Maryland, without establishing any facts affecting the rights of either Judson or Day to their title under the patent.—EDS.

PHOTOGRAPHIC BANK NOTE.—A Liverpool (England) paper says:—A curious circumstance has just happened to M. Aguda, whose talent in photography has given him a European celebrity. He laid a wager that he would so exactly imitate a French bank note that the difference should not be perceptible. By the time appointed the note was ready, and laid side by side with the original upon his desk. Judge, jury, all were ready to seize the smallest indication which should lead them into the right guess. The gentleman who had laid the wager took both notes in his hand to examine them in the strong light from the window, by some accident he changed or shuffled them from one hand to the other, and when he returned them to the desk, neither M. Aguda himself nor any one of the company could tell which was the false note and which the true. There they lie still—two thousand franc notes—and all connoisseurs are invited to give an opinion. Needless to say that the Banque de France has sent its most expert judges, but without effect.

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THE WAR.

Once more, though only for the short space of six weeks, delightful peace smiles upon the lovely plains of northern Italy. The Emperor of the French and Francis Joseph of Austria have agreed to an armistice, or breathing space, between the acts of this terrible European tragedy, of which no one can predict the closing scene. The success of the French has been bought at the cost of the lives of many men, and the numbers they have left dead and dying on the gory field has damped the enthusiasm that otherwise would follow such brilliant victories. It is as we predicted; war has become more bloody, and desperate carnage seems to be the only end at present gained; so many more useful lives swept away, or, as the tyrants think, so much more of the rabble killed. As our readers are familiar with the details of the conflict, from the columns of other papers, we would comment on one fact only, namely, that the battle of Solferino was won by *the bayonet*. This seems strange when we consider the improved artillery and fire-arms which both armies have in their possession. Inkermann was the same—won by the bayonet. There would seem to be something terrible in the idea of "cold steel" which appals the soldier not accustomed to its use, and the flash of sunlight on the polished blades of an advancing corps of foot probably unnerves the rifleman and distorts his aim. The French bayonet is shaped like a sword, and the soldier is taught to use it as a fencing weapon; indeed the exercise is but slightly different from that of the foil; and when it comes to close quarters and hand to hand fighting, it is next to impossible to break the guard of the bayonet thus used; while he who knows the method, and is master of the system, has it pretty nearly all his own way. This battle teaches us a new lesson in the art of war. In future, armies must not only be provided with artillery, carrying heavy ball a long distance and with perfect aim, and with rifles capable of doing deadly execution, but those rifles must be provided with light but strong bayonets: they must be light, not to injure the orifice of the gun or distort the bore, and strong enough to stand the clash of steel against steel. The soldier in future must not only be a good rifleman, with a steady hand and a true eye, but he must add agility of movement and a perfect command of his piece when used as a sword or foil. The old British triangular bayonet was principally intended for a thrust; the modern one is designed to cut. This makes a vast difference in the form of the charge, which now, instead of being as close and compact as possible, must be open enough to give each man room for the free use of his piece. Thus, we may gain lessons even from disasters; and the results and history of battles serves to enlighten those nations who depend on arms how to keep pace with other nations who might seek to conquer them. We should be especially thankful that our country has not much use for her soldiers, but we should keep them up to the other soldiers of the world for skill and weapons. Hoping that the armistice may lead to the liberty of the Italian and Hungarian people without more bloodshed, although it is almost "hoping against hope," we finish our "say" on the war.

CULTIVATION OF FISH.

A correspondent of the Laurensville *Herald* thus describes a fish-pond in Sumter (S. C.) District:—

"During my late visit to Sumter, I was shown all over the plantation of my friend, Freeman Hoyt, Esq., and here I met with a perfect model of a domestic fish-pond. Mr. Hoyt told me that the little stream of water running through his place was the main thing that sold him the land. The branch ran through a low place of such a form as to enable him, by a dam of some 50 yards long, to construct a pond of 700 feet in length by 150 in width, with a depth varying from the shores to 12 or 15 feet in the center. This gives him a pond of over 2¼ acres, where he could raise nothing else. One year ago this spring, he deposited in this pond eight good-sized trout, and near 300,000 eggs, with a large amount of smaller-sized fish for the trout to feed upon; and he now has the water literally swarming with the finny tribe. His trout are now one year old, and I caught one while there that was over seven inches long. Mr. Hoyt will not catch his trout until next year, and then I think he will almost be able to supply the town of Sumter with fish.

The water running from this dam passes through a seive, so that his fish cannot escape from the pond. A little below the dam is built a small two-story house, the lower story for bathing, while in the upper one is kept all the apparatus necessary for cultivating, feeding and taking the fish. All this convenience has been gotten up with a trifling expense, and will be in the future a large source of pleasure and profit to Mr. Hoyt and his family, and a perfect blessing to his neighborhood."

INSECTS.

Insects are largely endowed with the faculty of sight; for their eyes, though unable to turn, are infinitely multiplied, and compensate by quantity for their want of motion. To give an idea of the numbers some orders possess, I may mention that to one species of butterfly, by no means among the largest, is allotted nearly 35,000 eyes. These are distributed over every part of the body, and thus, whatever may be the position of the animal, no danger can approach unperceived, as a sentinel keeps watch in every quarter.

The passions of love and fear, and sometimes higher emotions, are exhibited very signally in some orders of insects, and are even expressed in sounds, which, while not without significance to the human ear, are doubtless full of meaning to themselves. The fact may be demonstrated by giving chase to a common blue-bottle, which will immediately raise its note in a surprising manner, the tone being one of unmistakable alarm. In tropical countries I have noticed the same peculiarity, with but little variation, in mosquitoes; and the adroitness with which these little janissaries avoid capture indicates an organization still more subtle.

Few are unacquainted with the alertness or ferocity of spiders, exhibited so constantly within the sphere of familiar observation. Let a fly be thrown on a spider's web and a strange spectacle will follow. The terror and despair of the fly at the first approach of his inexorable enemy, his energetic efforts to escape from the tyrant's clutches, and his last touching death-struggle, with the exultation, rage and malignant cruelty of the spider, are a vivid mimicry of the mightier paroxysms of man, which few will be able to contemplate with apathy or indifference.

I need not dwell here on the affection of insects for their progeny, as that is a passion which, by the wise providence of the Almighty, prevails, with few differences of degree, throughout the whole range of nature. But it would be an omission not to say that they experience more than usual difficulty in providing for the necessities and requirements of their young, yet pursue this object, under every disadvantage, with unwearying forecast, tenderness and perseverance.—*Fudlom.*

AGRICULTURAL COLLEGES.

Our people now appreciate the advantages of science in agricultural as well as other pursuits. At one period —and that at no great distance in the past—it was thought that a farmer, or a mechanic did not require any more education than merely the qualifications of reading, writing and a moderate acquaintance with arithmetic. It was held that clergymen, doctors and lawyers required a pretty good education, but as for farmers, why it was just money mispent, to give them such instruction. All these notions, we are happy to say, belong to a past age, and it affords us pleasure, to consider that we have thrown in our mite of influence to reform public opinion and bring about a better state of things. In several States, there have been established of late years, model farms, agricultural schools and colleges, and in the State of New York, a People's College has been instituted, for teaching mechanics and others, and we are now to have an Agricultural College also. About two weeks ago the foundation of the first building was laid in the town of Ovid, and on the banks of the beautiful Seneca Lake. The State has loaned to its trustees $40,000 without interest, and 40,000 valid subscriptions have been obtained. And a farm of 700 acres have been purchased, through which their runs a never failing stream that falls into the lake, and it is expected that the buildings will be so far completed by next spring, that 150 young men may be admitted for instruction—the full course for students embracing a term of three years; chemistry, botany, minerology, and zoology forming the chief studies. Together with these studies, we understand that practical farming is to be taught in the most superior manner, and this in our opinion should form the basis of the whole course of tuition. Who shall the trustees of this college employ to teach their students the best mode of keeping cows, milking them, making and preserving butter, cheese and such like, and who will they employ to teach them how to lay out fields, to plow, sow, reap, and a hundred other manual operations? If they do not select thoroughly skillful persons for all these purposes, their college will be a failure. We raise this voice of warning in order that nepotism may not prevail in such an important institution, as it commonly does in our railroads and other institutions, and from which so much evil has been experienced. Let men be chosen to fill their several positions in this college, on account of their abilities alone, and certain success will result, if a different policy prevails disaster will be sure to follow.

BI-SULPHURET OF CARBON ENGINE.

Prof. Carl F. F. Salomons, whose invention we have previously noticed, has discovered that in some parts of Europe they are using his invention without either giving him credit or pay for it. The invention is the use of a liquid called bi-sulphuret of carbon, which is highly elastic, and boils at 116° Fahrenheit, and which at 212° —the boiling point of water—exerts a pressure of 55 pounds to the square inch (according to Gay Lussac), instead of 15 pounds, which is the pressure of steam at the same temperature. This liquid the inventor deprives of all smell, and his engine is so constructed as to condense the liquid after it has been used once, so that it can be used with very little waste perpetually. A commission of engineers was appointed by Mr. Secretary Toucey, in 1857, to test an imperfect engine that had been constructed at Baltimore; they gave a very favorable report, expressing themselves as follows:— "There was no perceptible deterioration of the fluid from repeated boiling, or injurious action to the metal from its use." And again:—"We believe there is value in the discovery, which deserves a more thorough and perfect trial." This report was signed by D. B. Martin, engineer-in-chief, and H. Hunt, chief-engineer U. S. Navy. Another experiment has since been tried in Brooklyn, L. I., which proved equally successful. The invention should certainly be tried on a large scale with a perfect engine, and we hope to see it done.

A Great Canal Project.—The London *Illustrated News* states that the Bay of Biscay and the Mediterranean are to be united, and 1,200 miles to be saved, by a great canal through the interior of Spain. The project has received the sanction of the government of Spain, and the Queen, by her royal proclamation of March 25, 1859, has granted to its projector, Mr Charles Boyd, of Barnes, Surrey, England, two years to make the necessary preparations for carrying it into effect. This gigantic work, which is designed for the purpose of shortening the passage of shipping to and from the Mediterranean and the ports of northern Europe by more than 1,000 miles, will be 285 miles in length, 340 feet wide, and 30 feet deep—available for vessels of the largest and most unprecedented dimensions. It will commence at Bilboa, on the coast of Biscay, and proceeding through the Cantabian mountains and the valley of the Ebro, and passing by Saragossa and Estella, will fall into the Mediterranean at the Bay of Alfaques, in Catalonia. The cost of this enterprise has not yet been ascertained, but it is almost certain that a large portion of the expenses will be borne by the Spanish government.

Frost Every Month.—Thus far in 1859, there has been frost in some parts of New York, in every month, and that too, in the "Southern tier or counties," where it is generally supposed the climate is not very borean. Both on the first and fourth mornings of July, at Alleghany, there was quite a show of frost, On the 4th, the fences and plank walks were white with an icy covering, but vegetables were not seriously injured. We also heard of frost in several other places through the State, and we shall look for similar reports next month. In September, sure, we shall have it, so that if August escapes we shall have frost in eleven of the months of this year.

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NEW INVENTIONS.

VARIABLE CUT-OFF GEAR.—Ambrose Foster and Noah Sutton, of New York, have invented an improvement in variable cut-off gear for steam or other motive engines, which consists principally in the employment, for operating either the main valve or valves of an engine or a separate cut-off valve or valves, of a compound cam of novel construction, applied either upon the main shaft of the engine or upon a counter shaft, and serving to effect the cutting-off of the steam at various points in the stroke of the piston, either under the control of a governor or of any contrivance at the command of the engineer. This device is patented in England.

IMPLEMENT FOR TRIMMING LAMP WICKS.—Halvor Halvorson, of Cambridge, Mass., has invented a device for the above purpose, the object of which is to obtain an implement by which lamp wicks (those termed and generally known as the flat wicks) may be trimmed so as to have their top edges perfectly parallel with the top edges of the wick tubes, or trimmed in convex form so as to ensure an even and well proportioned flame, and thereby obviate the elimination of smoke and unpleasant effluvia attending the uneven trimming of the wick by the ordinary scissors or shears. The invention consists in the employment of gages in connection with a proper cutting device, the gages being so arranged as to retain the wick or hold it in proper position while being acted upon by the cutter or cutters, thereby effecting the desired end.

SEWING-MACHINE SHUTTLE-DRIVER.—Louis Planer, of New York, has invented an improvement in sewing-machines which relates to the driving of the shuttle by means of a driver having but a single horn or finger operating in or near the butt of the shuttle, and consists in an improved construction and arrangement of the notch provided in the butt of the shuttle, and an improved mode of applying the driver whereby the loops of the needle-thread are allowed to slip freely and without obstruction over the heel of the shuttle, and the shuttle is prevented flying up out of the shuttle-race in case of the accidental omission of the covering plates.

IMPROVEMENTS IN OSCILLATING ENGINES.—J. A. Reed, of Jersey City, N. J., has patented two improvements in oscillating engines, the first on July 5, and the other will be found in this week's list of claims. One has special reference to the trunnion boxes, and consists in the employment, in combination with a trunnion having a conical exterior, of a trunnion box lining which enters the box from its exterior and which fits to the exterior of the trunnion like a cap, and which, by being split from the center across the head and along one side, is made in a certain degree elastic, so that it may press equally tight all round the interior of the box and all round the exterior of the trunnion, as it is forced up against the trunnion by pressure upon its outer end to compensate for wear, and hence may always keep the trunnion true. The other consists in a certain arrangement of a reversing valve and steam passages in combination with stationary induction and eduction valves on the inner ends of the trunnion boxes, constituting a very simple means of reversing an oscillating engine.

COTTON-GIN SHARPENER.—This is the third invention and patent which A. H. Burdine, of Chulahoma, Miss., has obtained on this character of cotton-gin sharpeners. The present improvement, like his two former ones, is designed for sharpening the saws while in the cotton-gin and without removing the gin-shaft from its ordinary location. His improvement renders the machinery the perfection of simplicity and utility; it supports itself on the saw, and while it files the teeth in the most accurate manner, feeds the saw regularly as fast as the files have performed two strokes over each tooth. The claims, on another page, define the nature of the invention.

SIPHON WATER-WHEEL.—This invention consists in the arranging of a water-wheel in a vacuum at the top of a siphon or draft-cylinders, in such a manner that power may be obtained at an elevated place from a low stream or current which is not dammed. The principle of this invention is substantially the same as that on which the well-known siphon operates to raise water—*i. e.*, a vacuum is created in the draft-cylinders by filling the same with water and then allowing the water to flow from said cylinder at a point lower than the stream, and as "nature abhors a vacuum," the water of the stream rises to the top of the siphon through a curved pipe, and in descending to fill the vacuum, its weight falls upon the water-wheel and causes it to revolve, This is certainly a novel idea, and one which a great number of inventors have previously sought to bring into practical operation; but, not being satisfied with natural forces as agents to assist them, they have overstepped the mark, and produced "perpetual motion" without wind, water, stream, or any other force. The inventor is Mr. J. Shepard, of Orion, Ill.

FOREIGN SUMMARY—METALS AND MARKETS.

We recently (on page 27 of this volume) presented some statistics regarding the vessels belonging to the West India Royal Mail Company. Since that period the annual report of the Peninsula and Oriental Steamship Company has been published, and before the fleet of this company that of the former appears insignificant. The capacity of the West India fleet amounts to 44,000 tuns, that of the Peninsular Company to 84,000. The number of vessels which they own is 53 in active employment, and 12 undergoing repairs and building. Nearly all the steamers of this company are propellers.

A correspondent (W. Corbett, of the London *Engineer*) presents the following theory of the cause of steam-boiler explosions when the scale is formed inside and the water suffered to get too low:—"The scurf of boilers contain a portion of phosphate of lime, and should the plates become overheated, the hot iron takes the oxygen from the phosphoric acid and liberates the phosphorus. At the same time it takes oxygen from the steam and sets hydrogen free, so that phosphoretted hydrogen is formed in the boiler. Now, it only wants a little atmospheric air to form a Will-o'-the-wisp; and as all fresh water contains some air in suspension, that which goes into the boiler with the feed water will render the gas instantaneously inflammable and produce an explosion."

The Red Sea Telegraph line, just laid, has a submarine cable 1,370 nautical miles in length; but this is divided into several circuits, the longest of which is 800 statute miles. About 10 words per minute can be sent over the long circuit, and since the 28th of June, it has worked satisfactorily. It is the longest submarine line now in operation in the world. The copper conductors of the cable weigh 166 lbs. to the mile, twice as much as those of the Atlantic cable. The working of this line will be watched with deep interest.

The exports of British copper last year amounted to 24,787 tuns, of which 264 tuns were in coins for the colonies. There were 6,719 tuns of this amount unwrought, one-fourth of which went to India and the remainder mostly to France. The tin exports amounted to 2,327 tuns British and 298 tuns foreign. Of lead there were exported 17,645 tuns of pig and rolled sheets, 1,910 tuns of shot, 490 tuns litharge, 292 tuns red and 2,684 tuns white lead. A considerable amount of this was sent to the United States, but India, Australia and Canada took the most.

In Birmingham the electro-plating business is good, and in the better styles of jewelry there is more than an average amount of trade for the season of the year. The manufacture of fire-arms has been very extensive, as there have been large contracts entered into with the British government for the manufacture of 90,000 common and 240,000 sword bayonets. These arms are all to be finished in 68 weeks.

Several of the English railways are leased out for so much rent per annum, and a considerable improvement in their dividends have been effected by this arrangement. There has been a general improvement in the traffic and receipts of all the English railroads during the past year. 25,002,118 tuns of minerals were carried on all the lines during the six months ending last December, and 13,092,826 tuns of general merchandise. The total receipts on all the lines amounted to £12,825,826 for the six months—an increase of £113,126 over the preceding six months.

PRICES OF FOREIGN METALS, JULY 8.

	£	s.	d.		£	s.	d.
Staff. bar-iron, per tun..	8	00	00	Swedish steel, in faggot	21	00	00
Common English....	7	00	00	Copper in tile.....	107	10	00
Single sheet.....	9	10	00	British pig lead.....	22	15	00
Double sheet.....	11	00	00	Tin, block.....	129	00	00
Round nail rod.....	8	00	00	Bar.....	130	00	00
Square nail rod.....	9	00	00	Banca.....	134	00	00
Hoop iron.....	9	00	00	Plates (per box).....	1	19	00
Welsh iron rails.....	5	15	00	Spelter.....	19	00	00
Staffordshire pig-iron...	3	10	00	Zinc, in sheets.....	28	10	00
Scotch pig-iron.....	2	8	00	Copper sheathing, per lb	00	1	00
Swedish iron.....	13	00	00	Brass sheathing.....	00	00	10
Swedish steel.....	20	10	00				

The prices of the metals are about the same as last week, but there has been considerable excitement in the Stock Exchange owing to the news from Italy of the armistice between the French and Austrians. It has been supposed that this may lead to peace, and as a consequence, a general advance in cotton and yarns of ⅛d. per lb. took place at Manchester. There was also a good demand for American federal and State stocks, and a general improvement in all branches of business was expected.

New York Markets.

COAL.—Foreign cannel, $8; Anthracite, from $4.50, $4.75, to $5 50.

COTTON.—The market has been good, with a rise of one-fourth of a cent over last week's prices. Good ordinary Upland, Florida and Mobile, 10¼c.; Texas, 11c. Middling fair from $12¾c. to 13¼c.

COPPER.—Lake Superior ingots at 21c. per lb. for cash. Copper bolts, 30c. Sheathing, 26c.

FLOUR.—Genesee extra brands, $5.25 a $8.25; Ohio choice, $7.70 a $8; common brands from $5 up to $6.75.

HEMP.—American undressed, $140 a $150; dressed from $190 a $210. Jute, $95 a $90. Italian scarce. Russian clean, $210 a $215. Manilla 6¾c. a 6¾c. per lb.

IRON.—Anthracite pig, $21, $22 and $23 per tun; Swedish bar, $85 a $86, and English refined, $52.50 a $54.50. Russian sheet, first quality, 11½c. a 12c. per lb.

LEAD.—Galena, $5.80 per 100 lbs.; German and English refined, $5.70.

LEATHER.—Oak slaughter, light, 34c. a 36c. per lb.; Oak, heavy, 33c. a 35c.; Oak, crop, 40c. a 42c.; Hemlock, middle, 25c¾. a 26¾c.; Hemlock, light, 25c. a 25½c.; Hemlock, heavy, 23½c. a 24¼c; Patent enameled, 16c. a 17c. per foot, light. Sheep, morocco finish, $7.50 a $8.50 per dozen. But a moderate business in oak and hemlock.

NAILS.—Cut are quiet but steady at 3¼c. a 3¾c. per lb. American clinch sell in lots, as wanted, at 5c. a 6c.; wrought foreign, 3c. a 3½c.; American horseshoe, 15c. a 20c.

OILS.—Linseed oil, 61c. a 62c. per gallon; whale, bleached, 55c. a 57c. a 63.; sperm, crude, $1.30, $1.35, and $1.40; lard oil, 93c. a 94c.; refined rosin, 30c. a 40c.; coal, refined, $1.12 a $1.25; camphene, 44c. a 46c.

RESIN.—Common, $1.80¼ per 310 lbs. bbl.; white, $3.50 a $4.50 per 280 lbs.

STEEL.—English cast, 14c. a 16c. per lb.; German, 7c. a 10c.; American spring, 5c. a 5½c.; American blister, 4½c. a 5½c.

TIN.—Banca, 32c. per lb. Plates per box, $7.12 a $9, according to quality—a decline from last week.

ZINC.—Sheets, at 7c. a 7¾c. per lb.

The foregoing rates indicate the state of the New York markets up to July 21.

In the Albany lumber market no change has taken place since our list was published on page 27 of the present volume. The *Evening Journal*, of that city, says: "The receipts of lumber have been pretty large, but the bulk coming forward is unseasoned. The assortment in market is good. Dry lumber of all descriptions, to a limited extent, can now be obtained. The shipments of pine are still mainly confined to the eastern States and along the shores of New Jersey. There are some vessels in port loading for Richmond and Petersburg, but they are taking on assorted cargoes and mainly hard woods. The main features of the market have not undergone any important change since our last. The business, as usual in midsummer, is moderate, and scattered over the entire district."

The news from Europe of the armistice between the French and Austrians has had a considerable effect upon our markets, more especially cotton. On the day the news arrived no less than 3,000 bales were sold at an advance of ¼c. per lb. Provisions fell, and sales of saltpeter and lead were somewhat checked. The feeling prevailing in the market is difficult to describe. It is a sort of hopeful uncertainty, which puts a considerable restraint upon sales of all articles not immediately required for consumption.

Flour has fallen a little again. The grain and flour market in England is dull, and prices are low, owing to the prospects of a bountiful harvest. This affects our markets materially.

About $9,000,000 of specie have been shipped for Europe during the month. A similar drain on our precious metals is expected for the next month also.

There has been a decline since our last in most of the railway stocks. This is owing to a decrease of business on the roads.

A vast amount of French and German goods have recently arrived on consignment. It is thought that a great quantity of them must soon be sold at a sacrifice. This makes jobbers afraid to purchase freely in the legitimate way for the Fall trade.

In our next number we shall present some new and very interesting information regarding all the varieties of tin, especially that which is called *Banca*.

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ISSUED FROM THE UNITED STATES PATENT OFFICE

FOR THE WEEK ENDING JULY 19, 1859.

[Reported Officially for the SCIENTIFIC AMERICAN.]

*** Pamphlets giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

24,784.—Lewis Allen, of Sleepy Creek, Va., for an Improved Washing Machine:

I claim the construction of the open hollow washing, rinsing, and dipping cylinder, composed of a series of bars, r r, s s, placed at regular intervals from each other, and provided with an open network, u u, as described.

I also claim, in combination therewith, the fluted or ridged pressure, squeezing cylinder, q q, and detachable framing, e e2, f f, g* g2 g1. h h, i i, k k, when arranged, used, and operated in the manner substantially as set forth and described.

24,785.—Jacob Barney, of Chicago, Ill., for an Improvement in Variable Exhaust Device for Steam-engines:

I claim, first, The employment of two cylinders, B B, so provided with gradually tapering grooves in each, that when revolved together, an expanding and contracting circular opening will be formed for the purpose of regulating the passage of the exhaust steam from locomotive and other engines, substantially as set forth.

Second, I claim the cylinder, B B, as constructed, when used in combination, the tight metallic case, C C, and packing, o o, the same being arranged and operating in the manner and for the purpose fully set forth.

24,786.—James Baylor, of Canton, Ill., for an Improvement in Universal Joints:

I claim connecting shafts, when placed angularly with each other by means of the universal joints, constructed as represented and described, by which a rotary motion may be transmitted from one shaft to the other.

[This invention consists in the employment of a cylindrical coupling box, having two slotted bars pivoted within, and at either end of the box, at right angles to each other to the centers, of which the ends of the shafts are pivoted, so that a rotary motion can be conveyed from one shaft to the other when they have a considerable inclination, thereby dispensing with the beveled wheels commonly employed for this purpose, and obtaining a regularity of motion with very little friction.]

24,787.—W. H. Bettes and I. H. Parker, of Kokomo, Ind., for an Improvement in Boot-trees:

We claim, first, The employment of the sleeve, c, in connection with the screw shaft, g, the two being arranged and operating substantially as set forth.

Second, The arrangement of the cords, e, h, and i, with the levers, d' d', and m, substantially in the manner and for the purpose set forth.

Third, The combination of the instep, K, side pieces, H H', and toe-piece, l, when the whole are so arranged and constructed that they will operate simultaneously substantially as and for the purpose described,

24,788.—J. T. Bever, of Mainesville, Mo., for an Improved Bedstead Cord-pin:

I claim a bedstead cord-pin, consisting of two parts, a b, which are constructed and operated in the manner and for the purpose substantially as described.

[This is a device for performing the usual office of the common bedstead pin, and the additional operation of tightening-up the cord whenever it becomes slack. The invention consists in forming an eye through the ordinary pin, and having a turning-piece pass through said eye. This piece has a square head to receive a wrench; it also has ratchet teeth formed on it to gear with reverse set ratchet teeth formed in the side of the pin. The bed cord attaches to the inner end of the turning piece, and consequently when said piece is turned, the cord is twisted and made tight; the ratchet teeth preventing any slipping after the desired tension on the cord is produced. This is an ingenious device, and will accomplish well the tightening-up of the bedstead cords.]

24,789.—Wm. Bull, of New California, Wis., for an Improvement in Sugar-cane Presses:

I claim the arrangement and combination of the hinged adjustable frame, E, roller, J, frame, A, wedge, F, inclined spouts, L L', and roller, D, as and for the purpose shown and described.

[The object of this invention is to obtain a simple, efficient and economical device, one that may be manipulated with facility and advantageously used with a small application of power for the intended purpose, namely, expressing the juice from sugar cane, The invention consists in the employment of two crushing rollers arranged in a novel way, with feed and discharge spouts, an adjustable frame and juice receiver, arranged to attain the desired object.]

24,790.—A. H. Burdine, of Chulahoma, Miss., for an Improved Cotton Gin Sharpener:

I claim, first, The combination of two-crossed reciprocating files, F F, with a circular feeding disk, r, which is constructed with an angular recess, and an inclined hook, r', at one point of its circumference, substantially as and for the purposes set forth.

Second, The combination of the above with a jointed slotted frame and a driving cam, substantially as and for the purposes set forth.

24,791.—P. N. Burke, of Buffalo, N. Y., for an Improvement in Stoves:

I claim the arrangement and combination of the perforated plates, N R, the partitional plate, B, the flue, H, the fire-guard, I, hot air-pipe L, and chamber, K, as and for the purpose shown and described.

[In this stove the deposition and accumulation of soot, ashes, &c., around the ovens is entirely prevented, thus preserving their baking qualities unimpaired, and obviating the necessity of clearing them out. This is effected by dispensing with the reverberatory or dividing flues, and also the interior plates employed in forming them, and introducing in their stead in a particular manner highly charged air which is equitably diffused throughout the stove.]

24,792.—Jeremiah Carhart, of New York City, for an Improvement on Machines for Planing Metal:

I claim, first, The pressure plate, or plates, in combination with the reciprocating bed, and feeding strip, when said plates extend substantially the length of the blank to be planed, and the bed travels far enough to carry the feeding end of the strip entirely past the facing cutter at each operation, substantially as set forth.

Second, I also claim rebating the inner edges of the pressure plate, or plates, as described, in such manner as to furnish at once edge guides and pressure for the blank while being fed to the cutters,

Third, I also claim, in combination with the pressure plates and cutters, the shields extending downwards from the pressure plates to protect the space between the plates from shavings and other foreign manner as described.

Fourth, I also claim, in combination with the reciprocating bed and feeder, the scraper and brush, acting in combination for cleaning the bed and feeder or feeding strip, substantially as described.

24,793.—Herman Carter, of Greene, N. Y., for an Improvement in Harvesters:

I claim the vibrating discharger, F, in combination with the rake, e, arranged and operated in the manner described for the purposes specified.

24,794.—Robt. Cartwright, of Ithaca, N. Y., for an Improved Canal-boat Propeller:

I claim the step or bearing block, I, constructed and arranged relatively to the rudder and vessel, substantially as described, to receive the end thrust of the propeller, shaft, and thus relieving the gearing and rudder from pressure, the whole end thrust of the propeller being upon the step-block, I, which is arranged to admit of any lateral motion to the vessel's center line, thus forming a steering as well as propelling power, and being all placed externally, it entirely obviates the necessity of entering the vessel below the water line.

24,795.—Wm. Chesterman, of Centralia, Iowa, for an Improvement in Coffee-pots:

I claim the arrangement and combination of the piston-packed strainer, E, cylinder, D, receiving vessel, A, socket, H, and condenser F, as and for the purpose shown and described.

[By the peculiar arrangement of this coffee-pot, when the water in it is heated, the steam presses up through the strainer containing the ground coffee, and through a quantity of water above the strainer, so that when the pot is taken off the fire, a vacuum is formed in the lower portion of the pot, and the water above the strainer is forced through the ground coffee into the lower portion of the pot, whence it is drawn off by a spout, and the upper portion of the pot is provided with an air-tight vessel, which acts as a condenser for the vapor of the uppermost water, so that no aroma escapes.]

24,796.—John Clary, of Dayton, Ohio, for an Improved Vegetable Cutter·

I claim the arrangement of the cutting disk suspended from the cross-piece, b, in connection with the convex cutting edge of the cutters, h, substantially in the manner and for the purpose set forth.

24,797.—Wm. H. Davis, of Austin, Ind., for an Improvement in Double-acting Pumps:

I claim the construction and arrangement of the air-chamber, side pipe, and cylinders, and flange at the top all in one piece of casting, for the purpose of suspending the cylinders sufficiently deep in the well to prevent freezing, in combination with the bottom plate, substantially as set forth.

24,798.—Rufus Dawes and W. C. Choate, of Washington, D. C., for an Improvement in Stoves:

We claim the combination of a new fire-room for a downward draft, having a lid to close the opening at the top containing a valve in the lid and an open grate in front, having a door to close this opening air-tight, with a system of ovens heated and ventilated, as specified.

24,799.—B. F. Field, of Sheboygan Falls, Wis., for an Improvement in Rotary Cultivators:

I claim the combination of two or more wheels on one crank eccentric, or equivalent axle, when the said wheels are arranged in pairs on the axle, one wheel within the other, and so as that the spades or forks attached to the inner wheels shall pass out and in through the apertures in the outer wheels, for the purpose of displacing and pulverizing the soil over which they pass, in the manner described.

24,800.—J. D. Field, of Davenport, Iowa, for an Improvement in Stoves:

I claim the fire-chambers, D I, flue, F, and water-heater, H, the latter being provided with inclined tubes, a, to form the grate of the fire chamber, D, the above parts being arranged relatively with each other, the oven, B, and the smoke-pipe, C, to operate as and for the purpose set forth.

[The object of this invention is to obtain a cooking-stove in which the full benefit of the heat generated by the combustion of the fuel will be obtained, and consequently a saving of the latter effected, whether coal or wood be used.]

24,801.—Ambrose Foster and Noah Sutton, of New York City, for an Improvement in Variable Cut-off Gear for Steam-engines:

We claim the employment for operating either the main valve or valves of an engine or a separate cut-off valve or valves, of a compound cam, composed of two parts, C and D, constructed and combined with each other, and applied to the main or a counter shaft, substantially as described.

24,802.—August Freutel, of New York City, for an Improved Lock for Safes, &c.:

I claim, first, The slotted wheels, m, on the tumbler, l, and the plates, 7, in combination with the wheels, 6, of the knobs, k, when said wheels, m, are so arranged that the act of unlocking or attempting to unlock the bolt moves the wheels, m, away from the wheels, 6, in the manner and for the purposes specified.

Second, In combination with the tumbler, l, carrying the wheels, m, and acting as aforesaid, I claim the crosspiece, n, and tumbler, o, substantially as and for the purposes set forth.

24,803.—C. B. Garlinghouse and G. B. Garlinghouse, of Allensville, Ind., for an Improvement in Harvesters:

We claim the peculiar arrangement of the disk, C, in relation to the mechanism for operating the cutters, the standard, K, and sliding frame, m, in the manner and for the purpose specified.

24,804.—Halvor Halvorson, of Cambridge, Mass., for an Improved Trimmer for Lamp Wick:

I claim, in combination with a knife, D, and bed or anvil, E, or other suitable wick-cutting devices, gages, e f, constructed and arranged as shown, or in such a manner as to hold or retain the wick, and prevent it expanding laterally, while under the action of the cutting device, for the purpose set forth.

24,805.—Jacob Hess, of Niagara Falls, N. Y., for an Improvement in Lathes:

I claim the combination of the grooved central shaft, m, with its movable disks, e f, adjusting gears, k i, and index spring-hook, n, all of said parts being constructed and arranged in relation to each other as and for the purpose set forth.

24,806.—Grove Howard, of Westfield township, Ohio, for an Improvement in Machines for Raking and Loading Hay·

I claim the arrangement of the endless belt, F, pulleys, D and E, curved teeth, r, rods, K, lever, m, and catch, d, in the frame, A, and with the body, I, the whole being constructed and operating substantially as and for the purpose specified.

24,807.—L. S. Hoyt and B. B. Beers, of New Fairfield, Conn., for an Improved Bit-stock and Wrench:

We claim, first, The above-described wimble or bit-stock wrench with one permanent and one movable jaw, which may be readily adjusted to turn nuts or screws of different sizes, substantially as described.

Second, We also claim the block, k, or its equivalent, with a socket adapted to receive and hold the shanks of common bits, and fitted to the permanent or movable jaw or both so as to hold the block and bits substantially as described.

Third, We also claim the screw, N, so arranged as to fasten the block on to the jaw, C, and the bit in the socket, L, at the same time, substantially as described.

24,808.—Wm. Johnson and Martin Silmser, of Auburn, N. Y., for an Improved Steam Cock:

We claim a plug cock, with a sectional plug, whose sides are inclined to its axis, in combination with a single casing through which and directly opposite are openings whose sides are parallel to the axis of the plug, and constructed as described.

24,809.—David Knowlton, of Camden, Maine., for an Improved Joint for Pump-pipes:

I claim making the joint hemispherical, in combination with the stiff or rigid flanges, by which the parts joined hemispherically may be held at the desired angle, substantially as described.

24,810.—David Knowlton, of Camden, Maine, for an Improved Ships' Warping Chock:

I claim the cast-iron warping chock described, as a new article of manufacture.

24,811.—A. H. Lowell, of Manchester, N. H. for an Improved Hose Coupling:

I claim the locking devices described, in combination with the screw tube, K, arranged in connection with, and on the outside of said locking devices, substantially as described.

24,812.—Franklin I. May, of Beverly, N. J., for an Improvement in Grain Separators:

I claim, first, The two side or supplementary inclined planes, C and C', in combination with the short inclined plane, B, and the two adjustable guides, r and r', the same being constructed and arranged together so as to operate substantially as and for the purposes described and set forth.

Second, I claim the employment of the sliding board, E, in the shaker, E, when the said board is arranged to operate in combination with the screens therein, in the manner described, and for the purpose of better preparing the grain, &c., for the inclined planes, B C and C', and the rotary screen, A, as described and set forth.

24,813.—James H. Maydole, of Eaton, N. Y., for an Improvement in Foot-stoves:

I claim, in combination with a foot-stove, the several parts thereof being arranged in the order specified, the employment of a lamp constructed with an intermediate space, P, filled with plaster of Paris, or the equivalent thereof, whereby I am enabled to prevent the heating of fluid contained therein, for the uses and purposes set forth.

24,814.—Isaac C. Mayer, of Jersey City, N. J., for an Improved Machine for Turning Skins:

I claim the implement constructed and operated, as herein described, for the purpose of turning the skins used by furriers, as herein set forth.

24,815.—E. I. McCarthy, of Saugerties, N. Y., for an Improvement in Furnace Grates:

I claim a furnace with a series of stationary grate bars, in combination with a series of movable blades, so arranged as to pass between and above the bars, and descend below so far as not to obstruct the draught and be beyond the influence of the intense heat of the furnace, as described, for the purpose set forth.

24,816.—Z. N. Morrel, of Cameron, Texas, for an Improved Excavating and Grading Machine:

I claim, first, The employment of a revolving cylinder of blades, arranged at the lower end of the inclined digger, in combination with said digger, and with a series of colter plows arranged at the front end of the machine, substantially as and for the purposes set forth.

Second, The employment of a revolving cylinder of teeth or blades, arranged at the upper end of the inclined digger, in combination with said digger, substantially as and for the purposes set forth.

[By this invention the soil is first cut up in long narrow slices, then divided transversely into small clods, next elevated and pulverized, and then conveyed by endless longitudinal apron conveyors, which discharge it at right angles to or on one side of the grade or ditch. The arrangement of the parts in this machine is quite simple and compact, and we should think the machine is constructed on a plan which cannot fail to operate well.]

24,817.—Wm. Newell, of Philadelphia, Pa., for an Improved Machine for Scouring and Polishing Coffee:

I claim the combination of the two cylinders, B and E, having a space between them, with the scarified arms or beaters, L M, moving in contrary directions, substantially in the manner and for the purpose described.

24,818.—Wm. Perkins, of Plympton, Mass., for an Improvement in Railroad Car Brakes:

I claim, first, The arrangement of the sliding buffers, J, brake levers, N, rod, i, hooked rods, b b', and staple, n, to operate in combination with the brake, substantially as and for the purpose specified.

Second, Arranging the brake shoes, L, in combination with the staple, n, and hooks, m m', substantially as described.

Third, The arrangement and combination of the hooked rods, l l', and the rods, o o', and with the staple, n, so that the hooks, m m', can be adjusted according to the direction in which the car is to run, substantially as set forth.

Fourth, The arrangement and combination of the sliding buffer, J, lever, P, and spring, Q, substantially as specified.

[The great desideratum of a good car brake is to give the engineer perfect control over it, so that he is enabled to put on or take off the brakes at pleasure as well when the train is going a head as when it is going back, and the present invention, claimed above, answers this purpose.]

24,819.—A. P. Pitkin, of Hartford, Conn., for an Improvement in the Mode of Heating Drying Cylinders by Steam:

I claim, in combination, the closed heating cylinders, force pump, vacuum valve and connecting tubes, substantially in the manner as and for the purpose set forth.

24,820.—Wm. Porter, of Mexico, N. Y., for an Improved Saw Gummer:

I claim, first, the arrangement add combination of the lever, p, with the sliding box, g, by means of the bar, m, so as to give a continued and downward action upon the cutter or burr, f', by the use of the coiled springs, g' g', thereby feeding the said cutter or bur, as and for the purpose described.

Second, The arrangement and combination of the index pointers, h' h', with the index, B, and the bars, t t', connected to the frame, A, so as to give any required direction to the cutter or burr, f', as and for the purpose set forth.

Third, I also claim the use of the set screw, b', by means of which the distance between the blocks, a' a', is adjusted proportionally to saw plates of different thicknesses prior to being fastened thereto by the eccentric lever, c e.

24,821.—John A. Reed, of Jersey City, N. J., for an Improvement in Oscillating Steam-engines:

I claim the arrangement of the reversing valve, E, in a steam chest, on the top of a bridge-piece, D, in combination with the separate passages in the bridge-piece communicating the chambers in the trunnion boxes, substantially as described.

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24,822.—Benj. Robbins, of Machias, Maine, for an Improved Apparatus for Working Pumps:

I claim the combination and arrangement of the crank, f, fly-wheel, J, lever, H, walking beam, E, and piston rods, D D, as and for the purpose set forth.

[This invention relates to an improved arrangement of means for operating two reciprocating pumps, and consists in having the piston rods attached to the ends of a walking beam which is operated by segment gear from an oscilating arm, put in motion by a crank on a driving-shaft; the object of this arrangement being to apply power to the two pumps in as direct a manner as possible with the smallest amount of friction.]

24,823.—Edwd. A. L. Robbins, of New York City, for an Improved Furnace for Dental Purposes:

I claim the arrangement and application of the double inclined grates, c c, substantially as and for the purposes set forth.

I also claim, in combination with such inclined grates, the parts, B, to contain the muffle, C, retort, &c., the whole arranged substantially as and for the purposes set forth.

24,824.—Chas. Rundlett, of Alden, and John W. Drummond, of Winslow, Maine, for an Improved Hay Press:

We claim the arrangement of the driving drum or windlass, K, and the driving gear, I, with reference to the press-box, B, and the platen screws, D E, and their pinions, disposed on the sides of the press-box.

We also claim the combination and arrangement of the connecting rods, F F, and rings, G G, with each platen-elevating screw, E, and the bars of the cover of the press-box, the whole being to operate as specified.

We also claim the mode of applying the draft-rope guide, M, to the press frame and the driving pulley, that is, by means of a fulcrum, r, and the screw or projection made to enter the helical groove of the driving pulley.

24,825.—Henry Sauerbier, of Newark, N. J., for an Improvement in Edge Planes:

I claim the bevel wheel, e, pinion, b, worm, a, wheel, o, socket-shaft, p, pinion, D, feed-wheel, C, cutter-head, B, gages, i, roller, J, lever piece, t, and corliss head, Fig. 3, constructed, com ined and arranged substantially as herein-above set forth and for the purposes specified.

24,826.—Morrill A. Shepard, of Orin, Ill., for an Improved Hydraulic Motor:

I claim the combination of the vacuum tube, e, and tube, c, for giving motion to the water-wheel by the action of an undamned stream, substantially as described.

24,827.—T. Briggs Smith, of Marietta, Ohio, for an Improved Metallic Bung:

I claim a metallic screw bung, for casks or other wooden vessels, for holding liquids with a knife-like thread, and an elevation at any point between the threads, and a shoulder on the bung, let into the stave, substantially as and for the purposes specified.

24,828.—Lewis Solomon, of New York City, for an Improvement in Furnaces:

I claim so constructing a desulphurizing furnace for roasting the ores of precious metals, as that the heat shall be applied first beneath the sole of the furnace and afterwards on the surface of the ore, when the same is combined with a chamber arranged in the base of the chimney for the reception of such volatilized particles of ore, &c., as may be driven off by heat or carried over by the draught, substantially as described.

24,829.—M. B. Spafford, of Warsaw, N. Y., for an Improvement in Snow-plows:

I claim the vertical rotary shaft, S, with its spiral wings, W W', for the removal of snow from the railroad track, as described.

24,830.—Obed S. Squire, of New Haven, Conn., for an Improvement in Lasts:

I claim the arrangement and combination of the longitudinal sections, A B, strips, C D, and bolt, E, as and for the purposes shown and described.

[By this improvement the manufacture of india-rubber boots and shoes is much facilitated, the lasts being made in two halves, so that the shoe or boot can be widened without the length being increased and varieties of shape obtained without the necessity of tabs upon the last.]

24,831.—Geo. Storer, of New Britain, Conn., for an Improved Meat-masher:

I claim the hollow or solid cylinders with pointed angular teeth, the base of which teeth has nearly in contact, and in combination therewith, the device for adjusting the cylinders, all constructed substantially as and for the purpose specified.

24,832.—John G. Treadwell, of Albany, N. Y., for an provement in Stoves:

I claim the combination of the division, C, with the damper, D, and doors, E, when the same are arranged substantially in the manner and for the purpose specified.

24,833.—John G. Treadwell, of Albany, N. Y., for an Improvement in Stoves:

I claim the employment of the hinged plate, J, in combination with the hearth-plate above, the two being used and operated in the manner and for the purpose specified.

24,834.—A. K. Tupper, of Clarkston, Mich., for an Improved Elbow for Stove-pipes:

I claim constructing the joint of pipes, P and P', with flange, f', and the overlapping flange, f', so as to allow the pipe to be adjusted at any desired angle, substantially as described.

24,835.—Albert Warren, of Jefferson, Ohio, for an Improved Machine for Cutting Heels and Soles for Boots and Shoes:

I claim the bent knife, Y, resting on the shoulders, x x x x x, of the movable slides, as herein described, and for the purposes herein specified.

I also claim the knife, Y, resting on shoulders, x x x x x, as herein described, in combination with the knife, Q, adjusted as set forth, and by which any size or shape of leather may be cut, ready to be sewed or pegged upon the boot or shoe.

24,836.—W. A. Wood and J. M. Rosebrooks, of Hoosick Falls, N. Y., for an Improvement in Harvesters:

We claim, in combination with a main frame supported upon two driving wheels, and which frame carries the shaft, D, and main cog-wheel, E, a second frame, hinged to said shaft, D, so that the crank shaft on said second frame shall always be in a radial line to the main cog-wheel, E, however much said second frame may vibrate on the main frame, as set forth.

24,837.—Geo. W Watrous, of Hartford, Conn., for an Improved Fastening for Bedstead Drapery:

I claim as a new manufacture, or a new and improved article of manufacture, a drapery-fastening, constructed of a case, A, hook, C, link, D, substantially as and for the purpose described.

24,838.—Henry R. Worthington, of Brooklyn, N. Y., for an Improvement in Pumping-engine:

I claim, first, The combination set forth and exhibited of two direct-acting pumping-engines, propelled by steam or other fluid, so arranged as that each engine shall actuate the inlet and outlet valves, governing the motive power of the other, thereby ensuring the constant action of at least one pump-piston upon the water and relieving the action of the pump from shocks and concussions.

Second, I claim the arrangement shown of two distinct systems of levers adapted to the steam and exhaust valves of each engine, the one system to be operated upon for producing motion and for determining the duration of the repose of the piston at the termination of the stroke; the other for bringing the pistons to a state of rest—all substantially as explained and set forth.

24,839.—Jacob Beachler (assignor to himself and J. F. Brickley), of Anderson, Ind., for an Improvement in Railroad Switches:

I claim the obstruction or "scotch," E, applied to the turn-out and connected with the switch so as to be operated automatically by the movement of the same, substantially as and for the purpose set forth.

[The object of this invention is to prevent the casual movement of cars on turn-outs, so that the cars cannot pass the intersection of the main track and the turn-out, and prove a dangerous obstruction to the main track. It frequently happens that cars—freight, and empty or surplus passenger cars—are switched off on side-tracks or turn-outs, and if the grade of the turn-out be slightly descending towards the main track, the cars are very liable to move back towards the main track, a slight wind or other disturbing cause effecting the result. This difficulty is obviated by placing an obstruction by the side of the turn-out near the switch, and connecting the obstruction with the switch in such a way that when the switch is thrown in line with the turn-out the obstruction will not be in operation, but when the cars are on the turn-out the obstruction will be across one of the rails.]

24,840.—Norman Bedell (assignor to S. P. Bedell), of Albion, N. Y., for an Improvement in Elbows for Stove-pipes:

I claim, first, The employment of the metallic frame, C, constructed and used substantially in the manner and for the purpose set forth.

Second, The combination of the clasp, D, with the frame, C, as constructed for the purpose of holding the miter edges of the pipe together, substantially as set forth.

24,841.—H. F. Cox, of Jersey City, N. J., and Alex. Millar, of New York City, assignors to H. F. Cox, aforesaid, for an Improved Machine for Polishing Corks:

We claim the cork-polishing machine, consisting of a series of rollers roughened by a surface of pumice-stone, or equivalent abrading material, and a brush or brushes acting in conjunction to polish the cylindrical portion of machine-made corks, as described.

24,842.—Levi Dodge (assignor to himself and Dodge & Blake), of Waterford, N. Y., for an Improvement in Dies for Shaping Articles in Metal:

I claim the forming of articles of iron or other metal, when such articles are to be shaped by a simultaneous action or pressure of dies on several or all sides, the employment of the movable dies, e, operating substantially upon the principles set forth.

24,843.—Moses H. Gragg (assignor to himself and T. N. Page), of South Boston, Mass., for an Improvement in Corn-huskers:

I claim the arrangement and combination of the small intermediate conical roller, C, larger conical rollers, A B, guard, G, and hopper, D, as and for the purpose shown and described.

24,844.—Joseph C. Henderson (assignor to Rathbone & Co.), of Albany, N. Y., for an Improvement in Stoves:

I claim, first, The air-space, m, between the oven and the fire, when so constructed and arranged that a descending draft the whole width of the stove passes through said space, and thence to the fire, for promoting combustion, and at the same time rendering the temperature of the oven more uniform, as set forth.

Second, I claim the damper, n, at the front end of the oven, in connection with the descending flue between the front plate and fire box, whereby the oven can be entirely closed when the stove is in use for roasting, as specified.

24,845.—Lorenzo Lake (assignor to himself and Wm. Patton), of Middlebury, Pa., for an Improved Churn:

I claim the dasher, made in the manner as described in my specification and shown in drawings at L, when the same shall be operated by the devices as described for the purpose set forth.

24,846.—Robert McWilliams (assignor to S. H. Hoffman), of Philadelphia, Pa., for an Improvement in Journal-boxes for Railroad Cars:

I claim, first, The upper half, A, of the box, with its socket, formed by the flanges, h, in combination with the lower half, B, of the box, when the two halves are arranged substantially as set forth, so that on adjusting the lower half to its place it may assume the position shown in Fig. 1, and so that when adjusted the end, w, of the oil-chamber shall be close to the axle, as and for the purpose specified.

Second, The self-adjusting leather packing, E, and the metal plate, F, when both are dependent upon the lower half of the box for their proper position within the other half, and when they are otherwise arranged in respect to both upper and lower half of the box, as and for the purpose set forth.

24,847.—Louis Planer (assignor to himself and Joseph Auger), of New York City, for an Improvement in Sewing Machines:

I claim the combination of the peculiarly constructed notch, a b c, which is confined to the upper half of the shuttle and leaves the lower half intact, with a driver having a single horn or finger, which entering the said notch constitutes a guard to prevent the flying up of the heel of the shuttle, substantially as described.

24,848.—Geo. W. Richardson (assignor to himself and G. M. Weed), of Grayville, Ill., for an Improvement in Harvesting Machines:

I claim the application of the rack, d, upon the reciprocating bar, D D, and pinion, i, upon the vertical shaft, H, connected and arranged for operating the two sickles at the same time by the cam-wheel, c, in manner described.

Lyman L. Thomas, of Dighton, Mass., assignor to the Dighton Furnace Co., for an Improved Damper for Cooking Stoves:

I claim the damper, D, substantially as set forth, or in other words, I claim a damper placed in the outlet of the return flue of a cooking stove, near the termination of said flue, and of such a form that when secured or hinged at its lower end to the side of the flue opposite the oven, and when partially or fully closed it shall stand in a position more or less diagonal across the flue, and of such a length that it can never be moved more than twenty-five degrees from a perpendicular.

RE-ISSUES.

Lewis Miller, of Canton, Ohio, assignor to C. Aultman & Co., for an Improvement in Harvesters. Patented May 4, 1858:

I claim hinging the finger beam to the main frame so that it can be folded up thereon substantially as described.

Lewis Miller, of Canton, Ohio, assignor to C. Aultman & Co., for an Improvement in Harvesters. Patented May 4, 1858:

I claim hinging the coupling arm to the frame at one side of the main axle and supporting it by a brace hinged to the frame on the opposite side of the axle in such manner as to obtain among other things a wide basis for bracing on a short frame without interfering with the folding-up the finger-beam against or upon the frame to render the machine more portable, substantially as described.

Lewis Miller, of Canton, Ohio, assignor to A. Aultman & Co., for an Improvement in Harvesters. Patented May 4, 1858:

I claim the combination of the crank and the bearing for its journal the cutter, the coupling arm and the hinge of its inner end, with a hanger which is made the common support for the hinge of the coupling-arm and the journal of the crank arranged and operating substantially as set forth.

Lewis Miller, of Canton, Ohio, assignor to C. Aultman & Co., for an Improvement in Harvesters. Patented May 4, 1858:

I claim the method of folding the finger beam upon the frame by aid of the coupling arm with a lifting lever and cord, or the equivalent thereof, substantially as set forth.

Lewis Miller, of Canton, Ohio, assignor to C. Aultman & Co., for an Improvement in Harvesters. Patented May 4, 1858:

I claim, first, The combination of a knuckle with the joint which connects the finger beam and coupling arm, and the lever for raising the finger beam off the ground, the several parts being constructed and arranged as set forth.

Second, The combination of a lever arranged to turn on a pivot and to vibrate laterally with notches and a catch to support the lever at any required elevation, together with the coupling arm and finger beam suspended to it, substantially as set forth.

Lewis Miller, of Canton, Ohio, assignor to C. Aultman & Co., for an Improvement in Harvesters. Patented May 4, 1858:

I claim the arrangement of the hand lever, R, driver's seat, V, and foot lever, P, whereby the driver may, when necessary, employ both his hands and his feet to raise the finger beam, substantially as set forth.

Lewis Miller, of Canton, Ohio, assignor to C. Aultman & Co., for an Improvement in Harvesters. Patented May 4, 1848:

I claim the combination of the spring pawl and the teeth with the gib and key of the connecting rod and cutter, substantially as set forth.

C. Aultman and L. Miller, of Canton, Ohio, assignors by mesne assignments to C. Aultman & Co., for an Improvement in Mowing Machines. Patented June 17, 1856:

We claim the combination of the shoe which carries the end of the finger beam, next the main frame with a hinged brace-bar, whose axis of motion at the end connected to the main frame is in a line with that of the corresponding end of the hinged coupling arm, substantially as set forth.

Cornelius Aultman and Lewis Miller, of Canton, Ohio, assignors by mesne-assignment to C. Aultman & Co., for an Improvement in Mowing Machines. Patented June 17, 1856:

We claim the construction and arrangement of the finger-beam and the main frame, so that the beam may be turned on its hinge into an upright position and then raised and leaned against the frame to elevate it out of the reach of obstructions, and distribute the weight more equally upon the carrying-wheels when the machine is to be removed from one place to another where the mowing is to be done, substantially as described.

Cornelius Aultman and Lewis Miller, of Canton, Ohio, assignors by mesne-assignment to C. Aultman & Co., for an Improvement in Mowing Machines. Patented June 17, 1856:

We claim the combination of a hinged coupling arm, the finger-beam and a catch, substantially as described, whereby the finger-beam can be turned, raised and held up to render the removal of the machine from place to place more convenient and secure.

Cornelius Aultman and Lewis Miller, of Canton, Ohio, assignors by mesne-assignment to C. Aultman & Co., for an Improvement in Mowing Machines. Patented June 17, 1856:

We claim mounting the two driving-wheels and one main gear-wheel upon a common axle, in combination with a ratchet-wheel for each driving-wheel, each ratchet-wheel fitted with a pawl that can be made to stand in or out of gear with the ratchet teeth at will, the whole arranged and operating substantially as described.

Cornelius Aultman and Lewis Miller, of Canton, Ohio, assignors by mesne-assignment to C. Aultman & Co., for an Improvement in Mowing Machines. Patented June 17, 1856:

We claim the combination of a ratchet-wheel, a ratchet pawl, a spring acting on the pawl and a bearing pin, or the equivalent thereof, for the spring, with the driving-wheel and the axle of the main gear-wheel, whereby one spring is made to perform the two duties of holding the pawl, both in and out of gear, with the ratchet-wheel, substantially as described.

Lewis Miller, of Canton, Ohio, assignor to C. Aultman & Co., for an Improvement in Harvesters. Patented May 4, 1858:

I claim the combination of the inner shoe with a leading-wheel, arranged substantially as set forth.

Lewis Miller, of Canton, Ohio, assignor to C. Aultman & Co., for an Improvement in Harvesters. Patented May 4, 1858:

I claim the combination, with the shoe of an adjustable sole, of the peculiar double runner form, herein described, whereby the sole can be adjusted directly to the heel of the shoe without the intervention of a link-rod and joint, as set forth.

McClintock Young, Jr., of Frederick, Md., for an Improvement in Harvesters. Patented Sept. 21, 1858:

I claim connecting the handle of the rake to a transverse shaft in such a manner that the rotation of the said shaft, when aided by the curved guiding-rod, R, or its equivalent, will impart the within described movements to said rake, viz., a sweeping axial movement from the inner edge of the sector-shaped platform (or a little beyond the same) over to the forward portion of said platform, and at that point instantly changing to an axial horizontal movement across the platformt o the starting point, and so onwards in regular succession, substantially as set forth.

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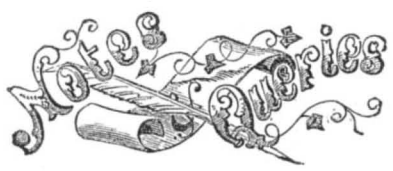

H. D. S.: of N. Y.—You can melt gold and silver in a crucible on a fire which has a good draft, or by the use of a bellows in a common furnace. Crucibles for this purpose are sold in the metal stores in this city. The specimen of coal which you have sent us is cannel; it can be obtained in this city, but it would be expensive to forward you such a quantity as you want.

A. B. McC., of Ohio.—To temper steel as hard as a file, heat it in molten lead until it becomes red hot, then plunge it into strong cold brine.

O. S. O., of N. Y.—Black lead mixed with oil and tallow makes a most excellent lubricator for carriage axles. Black lead makes a very good anti-friction substance for the wooden cogs of wheels.

N. A. P., of N. C.—Copal varnish can be colored to any shade of brown by dragon's blood. To render it very dark, add a little black Japa varnish. Linseed oil for carriage-painting should be boiled in an iron vessel in such a manner that the gas which arises from it will not come in contact with flame. Add to it the sulphate of zinc (about one ounce to the gallon) in very small quantities, at once, because when put in it is liable to fume over. Stir well during the operation until the oil becomes "ropy," when it should be removed from the fire and laid past for use.

J. B. S., of Ill.—The point on which Singer, Wheeler & Wilson, &c., pay tribute to Howe, is on the combination of the needle and shuttle. Neither Wheeler & Wilson nor Grover & Baker use a shuttle, but their contrivances are considered equivalents to the shuttle.

D. McK., of C. W.—The Goodyear India-rubber Co., corner of Nassau-street and Maiden-lane, this city, have india-rubber gas-holders for sale, and can furnish you any size you may want.

J. C. E., of Pa.—A temperature of from 65° to 70° is said to be the best for cream to be kept when churning. We do not know where you can obtain the oreide of gold at present.

W. S., of C. W.—To coat iron with copper, clean it perfectly from oxyd by an acid and clean water, then place it in a Smee's battery containing a strong solution of sulphate of copper.

J. C., of Pa.—The method which you propose for enabling the Atlantic cable to sink gently, by the use of buoys secured to it, is not new; it was tried in some experiments with the old cable, but was found to be of no avail.

W. P. W., of N. Y.—A strong decoction of logwood and yellow oak bark, or butternut bark, mixed together, will make a stain to imitate walnut on basswood. You can make the veins or streaks as deep as you choose by making the decoction very strong. Your subscription is received.

W. H. A., of Iowa.—The simple combination of a reaper and mower is public property, and free to Manny, yourself, and others. McCormick's patents have expired and have not been renewed.

J. L., of N. Y.—The article to which you refer did not relate to the cause of incrustation in boilers (which has been explained in former volumes), but to the choking up of a passage at one side of the boiler. We are aware that sal-ammoniac will remove incrustations, but it should never be used for this purpose, as the ammonia, when set free, passes off with the steam, and acts very injuriously upon the metal of the boiler, the valve boxes and cylinders.

S. F., of N. Y.—The specimen which you have sent us of alkaline silicates, mixed with fluor-spar, is very hard, but it is too brittle to be employed as a roofing cement. It may, however, be very useful for some other purposes.

H. D. B., of Md.—We do not know of a better aurist than Dr. J. Henry Clark, of 286 Fourth-street (opposite Washington Parade Ground), this city. We have known of some remarkable cures of a partial deafness performed by him, and think you would do well to correspond with him concerning your difficulty.

L. J. B., of Mich.—Water can be raised by a common "lifting pump" from wells 100 feet in depth. The plunger of a lifting pump is placed in a cylinder near the water, and it is connected to the lever or walking beam by a long rod which extends to the top of the well. Water, however, cannot be raised through the suction above 28 or 30 feet.

W. H. W., of Conn.—An iron walking staff with a glass head will never answer for a lightning conductor, or as a protective during thunder storms. A long copper or iron rod pointed on the top, and grasped with a dry silk glove on the hand would act as a conductor, but glass is a non-conductor.

J. R. H., of Wis.—For the cure of corns we have given many receipts. Sir H. Davy's was as follows:—Potash, two parts; salt sorrel, one part; each in fine powder. Mix, and lay a small quantity on the corn for four or five successive nights, binding it on with a rag.

To Make a Storm Glass.—A correspondent kindly sends us these instructions:—Get a glass tube about a foot long and an inch in diameter, sealed at one end, and furnished with a brass cap at the other, with a small aperture; the tube is then filled with the following solution:—Camphor, 2½ drams; nitrate of potash, 38 grains; nitrate of ammonia, 38 grains; water, 9 drams; rectified spirits of wine, 11 drams.

M. J., of Ala.—You will find the following a good blacking for boots and shoes:—Rub well together one pound of ivory black in fine powder, three-quarters of a pound of molasses, and two o nces of sweet oil. Afterwards add one pint of vinegar, and the same quantity of beer. This is for liquid blacking. For paste blacking ivory black, one pound molasses, half a pound; olive oil and oil of vitrol, of each, two ounces; water, a sufficient quantity.

L. A. C., of Mass.—The washerwomen of Holland and Belgium, so proverbially clean, and who get up their linen so beautifully white, use refined borax as a washing powder instead of soda, in the proportion of a large handfull of borax powder to about ten gallons of boiling water. They save in soap nearly one-half. All the large washing establishments adopt the same mode. For laces, cambric, &c., an extra quantity of the powder is used; and for crinolines (required to be made very stiff) a strong solution is necessary. Borax, being a neutral salt, does not in the slightest degree injure the texture of the linen; its effect is to soften the hardest water, and therefore it should be kept on every toilet-table. To the taste it is rather sweet, is used for cleansing the hair, is an excellent dentrifice, and in hot countries is used with tartaric acid and bicarbonate of soda as a cooling beverage.

L. A. P., of Ill.—The following is a good trap for snails, which are particularly fond of bran; if a little is spread on the ground, and covered over with a few cabbage leaves or tiles, they will congregate under them, and by making a morning examination, and destroying them, the numbers will be g eatly reduced,

F. K. S., of Conn.—The French chemist, Thilorier, became famous through his experiments in liquifying and solidifying the ordinary carbonic-acid gas, which may be generated very readily by pouring weak muriatic acid upon either chalk or marble. Thilorier's experiments were made principally with a view to obtain a otive power in lieu of steam.

Money Received

At the Scientific American Office on account of Patent Office business, for the week ending Saturday, July 23, 1859:—

O. G., of Ill., $25; E. G., of Ky., $30; J. H. S., of N. Y., $30; A. M. M., of Mass., $35; W. A. McD., of N. Y., $55; E. & R., of Mich., $30; W. McE., of Ind., $25; R. H., of Vt., $24; S. A. C., of Ill., $14; J. F. S., of Pa., $15; J. M., of Ill., $25; T. H., of N. Y., $25; S. B., of Va., $25; G. W. C., of Mich., $30; H. E., of N. Y., $55; J. McF., of N. Y., $30; U. P., of Conn., $140; S. & R., of Mo., $25; J. W., of Mass., $30; G. & S., of Mich., $25; K. & M., of Vt., $32; S. L. O., of Conn., $30; W. R. S., of N. Y., $30; E. D., of Ark., $35; V. H., of N. Y., $30; J. W. H., of N. C., $25; W. H. R., of N. Y., $250; C. W. B., of Mass., $30; D. D., of N. Y., $25; I. M., of N. Y., $25; D. P., of N. Y., $20; D. S., of N. Y., $25; A. T., of Conn., $30; N. E. R., of N. Y., $40; E. G. C., of N. Y., $30; R. H. & A. D. M., of N. Y., $250; C. R. H., of Wis., $30; T. C., of Mass., $30; S. & L., of N. Y., $10; L. E., of Conn., $40; H. G. T., of Mass., $00; S. & E., of N. Y., $25; H. S. L., of Ill., $30; E. D. & Z. W. L., of Ga., $25; M. R., of N. Y., $200; W. G., of N. Y., $30; J. S., of N. Y., $25.

Specifications, drawings and models belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, July 23, 1859:

J. T. S., of Pa.; I. D., of Mass.; I. M., of N. Y.; O. S., of N. Y.; T. H., of N. Y.; E. D., of Ark.; S. B., of Va.; N. E. R., of N. Y.; L. S. U., of Tenn.; D. S., of N. Y.; W. McE., of Ind.; A. M. M., of Mass.; T. C., of Mass.; J. W. H., of N. C.; M. & S., of Texas; D. C. G., of Conn.; O. E. W., of Pa.; H. E., of N. Y.; S. A. C., of Ill.; G. & S., of Mich.; O. G., of Ill.; C. R. H., of Wis.; E. G. C., of N. Y. S. & L., of N. Y.; E. D. & Z. W. L., of Ga.; K. & M., of Vt.; J. S., of N. Y.

Literary Notices.

History of the City of New York. By Mary L. ooth. Clark & Meeker, No. 40 Walker-street, New York.

Strange as it may appear to the denizens of the Old World who accumulate the histories of cities founded in the mythical times of barbaric chieftainism, and who gather their records in bundles of a century each, our juvenile city, of which the locality has been known to white men only for 250 years, has achieved for itself "a strange, eventful history." Discovered in 1609 by Henry Hudson, an Englishman, in the service of a company of Dutch merchants, and subsequently colonized by Hollanders, many of whose primitive customs still remain among us, it was afterwards conquered by the English, and made free by the Revolution. We have had exciting scenes enacted in our streets, and wondrous stories of domestic pathos told around our fir -sides. The relics of these things are quickly passing away before the all-conquering march of bricks and mortar, and our only method of preserving them is on the pi nted page of some book like the one before us. This tells the history of the city in a truly pleasing strain, with a Knickerbockerish simplicity that is as charming as it is true, and has a quaintness which is peculiarly and happily its own. To all who come to see what has been achieved in this western world in a short space of time upon American soil, this work will be invaluable, and no one who loves his native city, or is proud of the metropolis of the western world, should hesitate to transfer it from the booksellers' shelves to his own.

Practical Companion for the Tin, Sheet-Iron and Copper Smith.

This is the title of a neat little volume by Leroy J. Blinn, and published in Detroit by Barnes, French & Way. It contains rules, illustrated with diagrams, for describing various kinds of patterns used by workers in sheet-metal. Rules for cutting out elbows of sheet-iron, for cutting ovals, covers of cones, &c., are found in this volume. It is a very useful little work. See advertisement in another column.

Blackwood's Magazine. Published by Leonard Scott & Co., No. 54 Gold-street, this city. The No. for this month is the first of a new volume, and is full of interesting matter.

History of the Scientific American and Important Information to Patentees.

We have printed a supplementary edition of the Scientific American, in which there is a history of its rise and pro ress, with illustrations of the building, externally and internally, showing the spacious rooms in which our immense patent business is conducted, and with life-like representations of the artists, engineers and specification writers at their daily labors. The same paper contains information on the many intricate points arising in patent law and practice, and comprises the best popular treatise on the subject ever published; it should be in the hands of all who are interested either in procuring, managing or using patented inventions. The legal information contained in this paper is the result of fourteen years' experience as patent solicitors, and it cannot be found in any other treatise on patent law. It also contains information in regard to Foreign Patents and Extensions. It is published in octavo form, sixteen pages, and mailed upon receipt of two three-cent stamps. Address Munn & Co., publishers of the Scientific American, New York City.

Receipts.—When money is paid at the office for subscriptions, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a *bona fide* acknowledgment of our reception of their funds.

Patent Claims.—Persons desiring the claim of any invention which has been patented within the last fifteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and date of patent when known, and enclosing $1 as fee for copying.

Binding.—We would suggest to those of our patrons who have the last volume of the Scientific American complete, and desire to have it bound, that they had better send their numbers to this office, and have them bound in a uniform style with their previous volumes. Price of binding, 75 cents.

Preserve Your Numbers.—We often hear persons who have taken the Scientific American for the last dozen years, and preserved all the numbers since they commenced it, lamenting that they cannot procure the earlier volumes so that they may have the work complete. A few years hence there will be many who will regret they had not preserved the early numbers of the New Series; and that we may fulfill our whole duty to our patrons in this respect, we give them this early warning in regard to the first numbers of this volume. If the reader does not wish the numbers to bind for himself, undoubtedly, before the present year closes, the numbers can be sold at an advance above the cost, while he will have the benefit of a weekly perusal of the numbers which will cost him nothing. We counsel all to preserve their numbers.

Rates of Advertising

Thirty cents per line for each and every insertion, payable in advance. To enable all to understand how to calculate the amount they must send when they wish advertisements published, we will explain that ten words average one line. Engravings will not be admitted into our advertising columns; and, as heretofore, the publishers reserve to themselves the right to reject any advertisement sent for publication.

YOUR NAME IN GILT LETTERS (ADHESIVE). Size 1 inch, one cent each; 2 inches, two cents; 3 inches, three cents, &c., with red stamp to pay return postage. Grand Chance for Agents!—12 Alphabets, one inch, for $1; two inch, 8 for $1; three inch, 5 for $1—assorted colors. Address
5 3t GEORGE K. SNOW, Boston, Mass.

A SENSATION BOOK, BUT TRUE!—"WRECKS AND RESCUES." By an Early Member of the Board. 255 pp. 12mo, fine paper, with 4 engravings. Muslin, 75 cents; gilt, $1, by mail, post-paid. Containing the history of some of the most interesting and deeply touching cases in the earlier annals of the American Female Guardian Society. Address "American Female Guardian Society," No. 29 East 29th-street, New York. 5 1t

GENERAL AGENCY, TORONTO.—WILLIAM LYON MACKENZIE, Editor "Weekly Message," having resigned his seat in the Canada Legislature, is prepared to act as an Agent in such business matters as can be conveniently transacted by him for persons in the United States. Address, "Message Office, Toronto, Canada."
[From the New York Daily Tribune, July 12.]
"Whoever wishes his business to be attended to with energy, industry and fidelity can entrust it to Mr. Mackenzie." 5 1t

THE TWELFTH ANNUAL EXHIBITION OF the Maryland Institute for the Promotion of the Mechanic Arts. The Managers of the Maryland Institute announce another of their popular Exhibitions of Works of Art and Industry, to be opened in the great Hall of the Institute, in the city of Baltimore, on Tuesday the 4th day of October, 1859, and continue for four weeks. Manufacturers, Mechanics, Artists, Inventors, and all others desiring to display their respective productions, are cordially invited to contribute. Circulars containing particulars will be furnished by application to JOHN S. SELBY, Actuary, who will also promptly give any desired information on the subject. Those who desire to become depositors are respectfully requested to make early application for space, that the committee having charge of the exhibition may make their arrangements understandingly. SAM'L HINDES,
5 2t* Chairman of Committee on Exhibition.

TO INVENTORS, MACHINISTS AND MANUFACTURERS.—We are prepared to address Circulars, Handbills, Envelopes, Wrappers, &c., for any parties, to such persons in part of the country as would be most likely to require their several improvements and wares; and probably this is the most effectual and at the same time economical means which can be used to promote the interests of trade generally. Our lists are very extensive, and comprise Civil Engineers, Machinists, Blacksmiths, Carpenters, Carriage-makers, Agricultural Implement Dealers, Grist-mills, Saw-mills, Brickmakers, Builders, Hardware Dealers, Iron-founders, Printers, Painters, Druggists, Coppersmiths, Glass Manufacturers, Distillers, Bleacheries, Engravers, Bookbinders, Millwrights, Mining Companies, Boot and Shoe Dealers, Cotton and Wool Manufacturers, Paper-makers, Banks, Insurance Companies, Hotels, Country Stores, Patent Agents, Nurserymen, Tanners and Curriers, Brewers and Maltsters, Stove, Range and Furnace Dealers, Plumbers, Soap-makers, Cabinet-makers, Upholsterers, Steam-engine Builders—besides a complete list of Master Mechanics, and Superintendents on all the Railroads in the United States, and numerous other valuable and complete lists. Terms, $6 per 1,000. LEAVITT & CO.,
5 1t No. 37 Park-row (over Scientific American Office), New York.

LEAVITT & CO., COMMISSION AGENTS FOR the Purchase and Sale of Machinery, Implements and Tools of all kinds, No. 37 Park-row (over the Scientific American Office), New York. 5 1t

MAGIC LANTERNS.—We have carefully availed ourselves of every additional improvement to the Magic Lantern, and have always on hand a large assortment of beautifully executed slides, elucidating every branch of popular knowledge, to which we invite the attention of Teachers, Superintendents of Sunday Schools, and Public Lecturers. Our priced and descriptive catalogue, with illustrattons of the Magic Lantern, list of Slides, &c., furnished gratis and sent by mail, free of charge, to all parts of the United States. McALLISTER & BRO.,
5 1 No. 728 Chestnut-street, Philadelphia.

WANTED—Nos. 2, 3, 5, 6, 8, 10, 13 and 15 of Vol. V., and No. 3 of Vol. VI., Scientific American. Also, Vol. I., II., III. and IV. of the same, either bound or in Nos. Persons having the whole or any portion of the above will please address the subscriber, giving terms.
5 1t* JOHN P. NESSLE, Albany, N. Y.

TO REFINERS OF COAL OIL.—I HAVE ON hand and am working an excellent article of Crude Oil, which will be sold on fair terms. Address C. DICKEY,
5 0t* Coshocton, Ohio.

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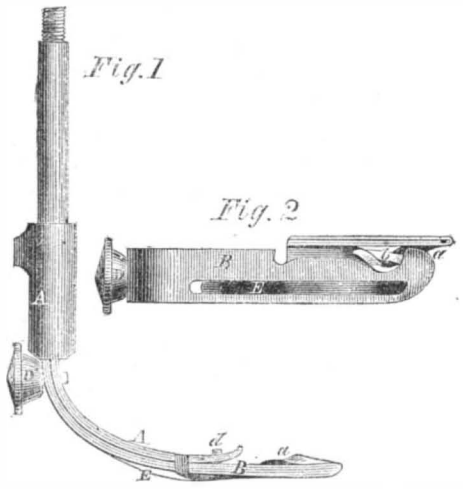
CLEMMON'S HEMMING ATTACHMENT TO SEWING-MACHINES.

This invention consists in the attachment of a secondary spring in the groove in the hemming attachment into which the feeder works, for the purpose of holding the cloth down to the feeder without reference to the thickness of hem.

In our illustrations of this excellent little attachment to every sewing machine, Fig. 1 is a side elevation and Fig. 2 is an underside view. A is the ordinary pressure-pad of a Wheeler & Wilson sewing-machine, the general construction of which and mode of attachment to the machine is the same as that generally employed. B is the hemming attachment, or rather the main-piece or stock of it, to which its smaller parts are attached. This is made with a groove for them and a spring-guide and point, *d* and *b*, to give the edge of the cloth a spiral direction to fold the hem. This attachment is so constructed that it may be readily attached to the ordinary pressure-pad of a sewing-machine without the necessity of removing any of the parts. The general idea of the details of the construction adopted may be gathered from a glance at Fig. 1. The attachment is so formed as to fit the under side of the pressure-pad nearly the whole



length of the under face of the pad. A slot is filed in the end of the said pressure-pad to receive the pin, *d*, which fits in it to secure the hemming attachment from turning. The other end of the attachment is secured and the whole of it kept up in place by the thumb-screw, D, which is tapped into the shank of the pressure-pad just above where it rises in an elbow from the cloth to unite with the parts above it. This attachment is very plain and simple, and further description is unnecessary. It enables the operator to remove or replace the hemming attachment in a moment. To prevent the cloth from getting away from the feeder, while at the same time the points of the said feeder are secured from the heavy pressure of the pad which holds the cloth upon the bed and to secure certainty of action without reference to the thickness of the hem, a spring, E, is attached to the hemmer in the groove above the feeder, as shown in the drawings. A piece of heavy lever watch spring is quite sufficient for the purpose and exerts a slight pressure which holds the cloth down to the feed, while at the same time it acts independently to a certain extent of the action of the pressure-pad.

The inventor is Wm. Clemmons, of Nicholasville, Ky., who will be happy to furnish any further information. The patent is dated March 1, 1859.

GREEN'S SECURE BELT COUPLING.

A small contrivance is often of the greatest value, and exercises an influence entirely disproportionate with its seeming unimportance. Such an one is the subject of our illustration, which looks a simple and insignificant invention, but from the perusal of letters from large manufacturers using them, it would seem to be an invention of great importance. It is a belt clasp for joining together the ends of machine belting, and as all who use it say, is far superior to lacing. Fig. 1 shows a top view of two ends of a belt joined with this clasp, and Fig. 2 is a section through the joint. A B, represent the ends of the belt, and C is a metal stock or plate of oblong form, and equal or nearly equal to the belt in width. This stock is firmly riveted to one end, B, of the belt, and it has a slot or opening, *a*, made longitudinally through it. One edge, *c*, of the slot is corrugated, and the opposite edge is grooved to form a concave, *d*, to receive one edge, *e*, of the tongue, D, which is grooved and corrugated, *f*, to correspond with or fit into the edges of the slot. The tongue is not so large as the slot, room being allowed to pass the belt between

Fig. 1

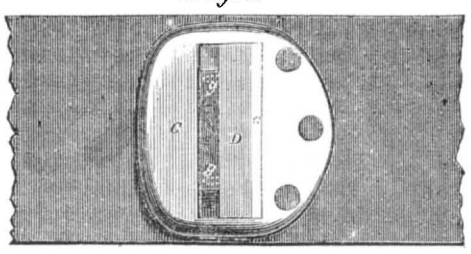


Fig. 2

the tongue and the edge of the slot; and the tongue is provided with two spurs, *g*, which enter into the belt and hold it fast. When the end of A is passed through the slot in C, between its edge, *c*, and the edge, *f*, of the tongue, D, the tension of the belt when in operation will cause the edges, *f*, of the tongue to press the end, A, of the belt firmly against the edge, *c*, of the slot, for the edge, *e*, of the tongue is lower than the corrugated edges, *f*, and the spurs, *g*, which are forced into A, prevent the tongue from moving outward and releasing the end of the belt, when the belt is suddenly cast off from the driving pulley, a contingency likely to occur under the circumstances if not provided against, owing to the sudden cessation of the tension of the belt and a slight degree of elasticity which it possesses. The end, A, can be detached by drawing it outward through the slot with pincers or the hand, until the spurs, *g*, pass out of the leather and allow the tongue to be removed.

The inventor and general agent is Samuel Green, of Mottville, N. Y., and the manufacturer is E. B. Hoyt, of the same place, either of whom may be addressed for further information. The patent is dated March 23, 1858.

MASURY'S IMPROVED PAINT CAN.

One of the great objections to the many cans for conveying small quantities of paint and such like substances about, or holding them hermetically sealed, is that they are remarkably difficult to open, as we expect nearly all our readers have discovered for themselves. The invention which we have illustrated is a very simple method of overcoming this difficulty without adding materially to the expense of the can.

The can, A, is made of tin or other metal, and the top or cover, C, is also of tin or the same metal as the can, but is somewhat smaller than the opening so as to allow of a margin of soft, thin sheet metal, such as brass. B, to which the cover can be soldered and that can be soldered by the can. This margin of soft metal can be cut with a penknife and the cover easily removed. The operation of cutting is like that of opening a sardine box, and is shown in our engraving.

The inventor is J. W. Masury, of Brooklyn, L. I., and the patent is dated July 12, 1859. Any further information can be obtained by addressing Masury & Whiton, No. 111 Fulton-street, New York.

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Ascend the Alleghany mountains and we can behold a broad range of rugged country as far as the eye can reach, as yet not much cultivated. Look in another direction and see mighty rivers, rolling calmly on their course, or their surfaces rocked by the blast of the tempest.

Walk forth some moonlight night, when the stars are shining like rubies set in the firmament of heaven, and gaze on their brilliant aspect; so silent and tranquil is the scene before you that you are enchanted with its beauty.

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MUNN & CO.,
Publishers, No. 37 Park-row, New York.

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